NPDES Storm Water Management Plan for MassHighway Owned and Operated Highways

EPA Permit Number: MAR043025

MaDEP Transmittal Number: W040919

Massachusetts Highway Department
Ten Park Plaza
Boston, MA 02116

March 2, 2005

NPDES Storm Water Management Plan for MassHighway Owned and Operated Highways

March 2, 2005

The Commonwealth of Massachusetts
Mitt Romney, Governor
Kerry Healey, Lt. Governor

The Executive Office of Transportation and Construction
Daniel A. Grabauskas, Secretary

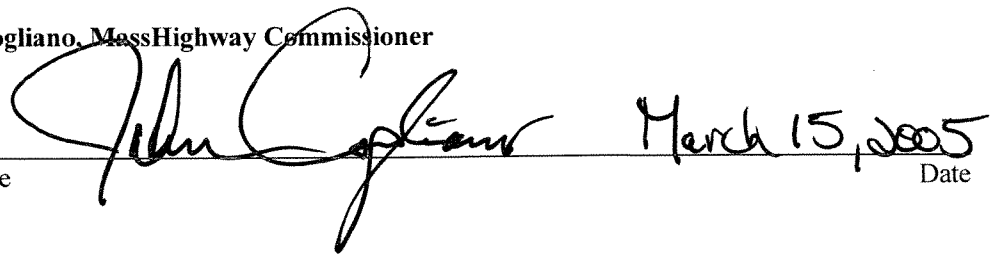
Massachusetts Highway Department
John Cogliano, Commissioner

NPDES Storm Water Management Plan for MassHighway Owned and Operated Highways

Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, I certify that the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.[1,2]

John Cogliano, MassHighway Commissioner



Signature

March 15, 2005

Date

[1] EPA's Response to Comments document for this general permit indicates that in regards to the Endangered Species Act, this certification "*should be based on the permittee's knowledge at the time of submission of the Notice of Intent (NOI). MS4 operators should make determinations based on current information. As a permittee implements its storm water management program, new information regarding locations of outfalls may become available. As the new information becomes available, the permittee may need to reevaluate the ESA certification criterion to ensure that permit eligibility with regards to ESA is maintained.*" MassHighway is not currently aware of any discharges that are impacting federal or state-listed endangered species habitat. As discussed in Section 4.0 of this Storm Water Management Plan, as discharges are identified during the permit, they will be reviewed for compliance with the endangered species programs.

[2] EPA's Response to Comments document also indicates that regarding the National Historic Preservation Act (NHPA) the permittee "*should submit the NOI based on the best information available at the time of submission. As the program develops new information may become available. As the new information becomes available, the permittee may need to reevaluate the National Historic Preservation Act (NHPA) certification to ensure that permit eligibility with regard to NHPA is maintained.*" MassHighway is not currently aware of any discharges that are impacting places listed or eligible for listing on the national Register of Historic Places. As discussed in Section 4.0 of this Storm Water Management Plan, as discharges are identified during the permit, they will be reviewed for compliance with NHPA.

TABLE OF CONTENTS

TABLE OF CONTENTS (Cont'd)

LIST OF FIGURES

LIST OF TABLES

1.0 EXECUTIVE SUMMARY

The National Pollutant Discharge Elimination System (NPDES) is a federal program established under the Clean Water Act (CWA) administered by the U.S. Environmental Protection Agency (EPA). The NPDES program is aimed at controlling potentially polluted discharges, which can impact waters of the United States. The first phase of the program (Phase I) targeted large (serving cities and counties with more than 100,000 people) municipal separate storm sewer systems (MS4s), construction activities that disturbed more than five acres and industrial sites. The second phase of this program (Phase II) expands the program to construction activities that disturb between one and five acres and MS4s within "urbanized areas". This document focuses on the effects to MassHighway, which is considered an operator of a MS4 according to EPA's definition.

Urbanized Area - a land area comprising one or more places —central place(s) — and the adjacent densely settled surrounding area — urban fringe — that together have a residential population of at least 50,000 and an overall population density of at least 1,000 people per square mile

The Phase II regulations expand jurisdiction from municipalities with a population exceeding 100,000 people based on the 1990 census to existing storm water systems in "urbanized areas" as defined in the 2000 census. According to these new regulations over half of the roads in the MassHighway network are within urbanized areas (see margin inset).

MassHighway District	Estimated Road Miles	Estimated Road Miles within Urbanized Areas	% within Urbanized Area
District 1	354	19	5
District 2	570	177	31
District 3	825	463	56
District 4	1,081	924	86
District 5	1,303	802	62
Statewide	**4,132**	**2,385**	**58**

EPA determined that it would be impractical to require a permit for each individual discharge point (headwall, outfall, etc.) from a municipal or public agency drainage system. Instead they issued a General Permit which allows MS4s to submit a single, general permit application detailing how the system facility operator, in this case MassHighway, will meet six "minimum control measures". This document, MassHighway's Storm Water Management Plan (SWMP), discusses how MassHighway will meet each of six minimum control measures through current programs, expansion of current programs, or development of new programs. New

6 Minimum Control Measures
1. Public Education and Outreach
2. Public Participation and Involvement
3. Illicit Discharge Detection and Elimination
4. Construction Site Runoff Control
5. Post Construction Runoff Control
6. Pollution Prevention/ Good Housekeeping

programs are only proposed if the programs currently in place do not fully meet the minimum control measure requirements. The plan will address programs for MassHighway roadways, maintenance facilities and rest areas.

In an effort to track the success of these programs, EPA requires that the applicant (i.e., an MS4 operator) indicate goals which can be measured, either quantitatively or qualitatively, for each minimum control measure and provide a schedule for meeting the goals over the five year permit term. The measurable goals and schedule are discussed within the SWMP.

The following sections describe the EPA requirements and briefly summarize how MassHighway will meet the requirements for each of the six minimum control measures:

1.1 Public Education and Outreach

EPA Requirement: *Implementation of a public education program to distribute educational material to the community. In the case of a transportation agency, the community is defined as employees, contractors and the general public. The public education program must provide information regarding the impact of storm water discharges on water bodies and the steps that the community can take to reduce the pollutants in storm water runoff.*

MassHighway Plan: MassHighway will continue its important efforts at public education and outreach through a series of existing programs (MTAP/ Baystate Roads), addition of an Environmental Section web page on the MassHighway web site, conducting a storm water training workshop for both internal staff and municipal DPW personnel, publishing an article in the Construction Industries of Massachusetts journal regarding NPDES Phase II requirements and MassHighway procedures, and implementing measures to address municipalities' concerns regarding storm water drainage system tie-ins and illicit connections. Programs in the remaining control measure sections will also include public education and outreach.

1.2 Public Participation/ Involvement

EPA Requirement: *All public involvement activities must comply with state public notice requirements.*

MassHighway Plan: MassHighway will continue to involve the public in projects by complying with state public notice requirements and continue the important public participation/ involvement efforts of Adopt-a-Highway and Project Clean. The MassHighway web site will provide an opportunity for public to comment on MassHighway related activities and for MassHighway

to publicize storm water initiatives, the Storm Water Management Plan, annual reports (after they are submitted to the agencies) and other relevant documents. Existing and proposed programs for the remaining control measure sections also include public participation and involvement aspects.

1.3 Illicit Discharge Detection and Elimination

EPA Requirement: *Develop and implement a plan to detect and eliminate illicit discharges to the storm water system. An illicit discharge is any discharge to a municipal separate storm sewer system that is not composed entirely of storm water, except as indicated in the NPDES permit. This plan must include:*

- *Mapping all discharges within urbanized areas:*
- *Creating a regulatory mechanism on non-storm water discharges and appropriate enforcement procedures and actions;*
- *Develop and implement a plan to detect and address non-storm water discharges, including illegal dumping, into the system;*
- *Educating the public and MassHighway employees about the hazards associated with illegal discharges and improper disposal of waste, and*
- *Address non storm water discharges if they are identified as being significant contributors of pollutants.*

MassHighway Plan: Due to the number of road miles owned and operated by MassHighway (approximately 2,385 miles), the mapping of the drainage system within urbanized areas is a significant undertaking. MassHighway will use a multiple prong approach to populate the database and creating the statewide drainage map including:

1. drainage mapping and illicit connection review included in future construction and redevelopment projects (roadway, rest area and maintenance facilities),
2. rest area drainage information gathered during lease renewal when redevelopment is proposed, and
3. field surveys in each district.

MassHighway has developed an Illicit Drainage Connection Policy prohibiting the connection of illicit connections to the MassHighway drainage system. This policy will be submitted to the Chief Engineer and Commissioner for issuance to the Department in the near future.

MassHighway is also revising their Drainage Tie-In Standard Operating Procedure (SOP) to provide a permitting mechanism for connection of storm water to the MassHighway storm water system in the limited cases where it is appropriate. Once the SOP is finalized, it will be submitted to the Chief Engineer for approval and issuance.

MassHighway will review twenty potential illicit discharges each year, although based on past studies and the nature of the highway system there is little probability that such connections exist. MassHighway staff will focus on urbanized areas where potential connections are more likely.

1.4 Construction Site Runoff Control

EPA Requirement: *Develop, implement and enforce an erosion and sediment control program for construction activities which drain to the MS4 that disturb one (1) acre or more of land.*

MassHighway Plan: MassHighway will meet this minimum control measure through the continued support of current programs and the development of selected additional programs. The on-going programs which provide effective construction site runoff control include: project compliance with MassHighway Department Highway Design Manual, MA DEP Stormwater Management Policy, NPDES Construction General Permit, other state environmental regulations and policies, MassHighway Stormwater Handbook and the Standard Specification for Highway and Bridges.

MassHighway currently is developing a Resident Engineer Field Guide on Erosion Control. This field guide will identify the standard construction site conditions that require erosion control, as well as provide typical details with installation and maintenance information for a suite of basic erosion controls. It will also include a matrix that matches site conditions to field-proven erosion controls. The intent of the field guide is to provide MassHighway construction field staff with readily accessible information on what site conditions should be addressed and the erosion control techniques that work.

MassHighway is also developing a generic Storm Water Pollution Prevention Plan (SWPPP) for use by the department and MassHighway contractors to comply with the NPDES Construction Permit. The generic SWPPP will include a form for project specific information to be completed by both the designer and the construction contractor. Forms and directions will be provided to allow the Contractor to provide the construction-related information necessary to complete the SWPPP. A bid item and special

provision language will be provided for all contracts that meet the one-acre threshold. The item will address completion of the SWPPP and costs for inspections, reports, and other regulatory requirements. Once complete, MassHighway will continue to evaluate the effectiveness of the generic SWPPP and revise as necessary. MassHighway will convert the generic SWPPP into a computer program that will be accessible to contractors on MassHighway's web site near the end of the 5-year permit term.

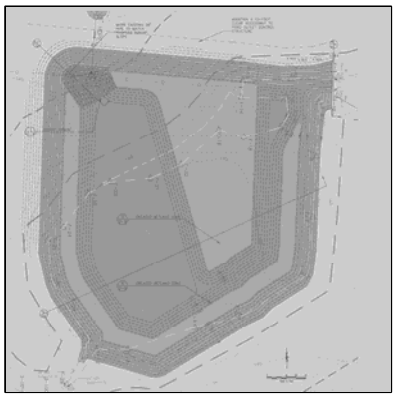
MassHighway will also prepare a Notice to all pre-qualified Construction Contractors regarding NPDES Phase II Construction requirements, conduct annual erosion prevention and sediment control training for internal personnel, sponsor and conduct an erosion control workshop and vendor exhibit, perform field test of new erosion and sediment control materials, and issue annual construction bulletins to each District regarding storm water issues.

1.5 Post-Construction Runoff Control

EPA Requirement: *Develop, implement and enforce a program to address discharges of post-construction storm water runoff from new development and redevelopment areas which disturb greater than one acre and discharge into the MS4. The post construction program must include:*

- *A regulatory mechanism to address post construction runoff from new development and redevelopment;*
- *Procedures to ensure adequate long term operation and maintenance of best management practices; and*
- *Procedures to ensure that any controls that are in place will prevent or minimize impacts to water quality.*

EPA indicates that MassHighway may use the approved Storm Water Management Handbook as a tool to implement this provision.



MassHighway Plan: MassHighway will continue to incorporate the latest storm water control and treatment in the design of new projects. The Environmental Section has recently developed the MassHighway "Stormwater Handbook", as cited in the NPDES general permit for small MS4s, which provides guidance in the development of cost-effective storm water management strategies for highway projects to comply with the MA DEP Stormwater Management Policy and Performance Standards. MassHighway projects within urbanized areas (even if not subject to the Wetlands Protection Act) will be designed to comply with the criteria in this Handbook. The drainage inventory database will also include an inventory of storm water BMPs (detention ponds, swales, etc.) owned/ operated by MassHighway.

During the 5-year permit term (7/03 – 5/08) permit term, MassHighway will develop a BMP Maintenance Manual which will be used as a field guide by MassHighway personnel during maintenance and inspection of these structures.

MassHighway, through an environmental consultant, will develop a Highway Runoff Contaminant Model that will characterize and estimate contaminant loading from highway runoff. This information will be used to design the most practical BMP(s) that corresponds to the sensitivity of the adjacent receiving water body.

1.6 Pollution Prevention/ Good Housekeeping

EPA Requirement: *The permittee must:*

- *Develop and implement a program with the goal of preventing or reducing pollutant runoff from facility operations. The program must include an employee-training component;*
- *Include maintenance activities for rest areas along interstates, weigh stations, material storage yards, new construction and land disturbance, roadway drainage system maintenance and storm sewer maintenance;*
- *Develop schedules for the maintenance activities described above; and*
- *Develop inspection procedures and schedules for long- term structural controls.*

MassHighway Plan: MassHighway has many programs that address this minimum control measure. Programs addressing source control (Project Clean, Adopt-a-Highway, Reduced Salt Areas, etc.), training, maintenance and waste disposal all fall under good housekeeping practices. MassHighway will continue these important programs and evaluate whether additional activities, which would benefit water quality, could be added to the programs during the permit term.

MassHighway's current good housekeeping programs include environmental compliance at each of the 139-maintenance/ material storage yards. MassHighway has recently prepared a Facility Handbook for each facility which includes information needed to maintain environmental compliance in accordance with MassHighway's Environmental Management System (EMS). The handbook is used as a reference guide and contains useful information such as Standard Operating Procedures (SOPs) and environmental policies.

MassHighway will develop and implement a method for maintaining records on the frequency of inspection and maintenance of catch basins, which is performed by private contractors. In addition, the Department will perform detailed data collection on debris accumulating in a variety of representative catch basin locations. The data collection will be performed for a period of three years and the data from this study will be used to evaluate and update, if necessary, the current Standard Operating Procedure (SOP) for catch basin cleaning. The SOP addresses inspection and maintenance of catch basins at all MassHighway roadways and facilities.

1.7 Additional Information

The following topics are also discussed in the Storm Water Management Plan:

- Discharges Potential Impact on Endangered Species
- Discharges Potential Impact on Essential Fish Habitat
- Discharges Potential Impact on National Register of Historic Places Properties
- Discharges Potential Impact on Water Quality Impaired Waters
- Discharges to Waterbodies with Established Total Maximum Daily Loads
- General Permit Part V – Additional Resources (public swimming beaches, groundwater recharge areas, stressed basins and Public Drinking Water Supplies)
- General Permit Part IX – Resource Areas Required for Priority Consideration (public water supplies, public swimming beaches, ORWs, shell fishing areas, 303d listed waterbodies and cold water fishery river segments)
- Storm Water Management Plan Evaluation and Assessment

2.0 INTRODUCTION

A primary objective of state and municipal transportation departments throughout the Commonwealth is to provide a safe, efficient, and cost-effective highway system. The development and maintenance of a transportation system, providing mobility and access to major geographic areas, is necessary to the economic well-being of Massachusetts. Likewise, quality of life and economic prosperity also require protection and enhancement of our natural resources. Therefore, construction and operation of our highway system must balance the public goals of environmental protection (such as storm water management) with those of safety, access, and mobility.

2.1 NPDES Phase II Storm Water Regulations

The U.S. Environmental Protection Agency (EPA) published the regulation entitled "National Pollutant Discharge Elimination System – Regulations for Revision of the Water Pollution Control Program Addressing Storm Water Discharges; Final Rule" on December 8, 1999 in the Federal Register. This program is often referred to as the National Pollutant Discharge Elimination System (NPDES) Phase II program.

Under the Phase II regulations [40 CFR Parts 9, 122, 123, and 124:], portions of the highway drainage system owned and operated by MassHighway meet the definition of a regulated Municipal Separate Storm Sewer Systems (MS4s). According to 40 CFR 122.26(b)(8), **"**municipal separate storm sewer" is defined as a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains):

(i) "Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the Clean Water Act that discharges into waters of the United States;

(ii) Designed or used for collecting or conveying storm water;

(iii) Which is not a combined sewer; and

(iv) Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2."

Federal and State-operated small MS4s can include universities, prisons, hospitals, roads (i.e. departments of transportation), military bases (e.g. State Army National Guard), parks and office buildings/complexes.

Operators of regulated small MS4s are required to:

- Apply for National Pollutant Discharge Elimination System (NPDES) permit coverage;
- Develop a storm water management program which includes the six minimum control measures;
- Implement the storm water management program using appropriate storm water management controls, or "best management practices" (BMPs), by the end of the permit term (typically 5 years);
- Develop measurable goals for the program; and
- Periodically evaluate effectiveness of the program.

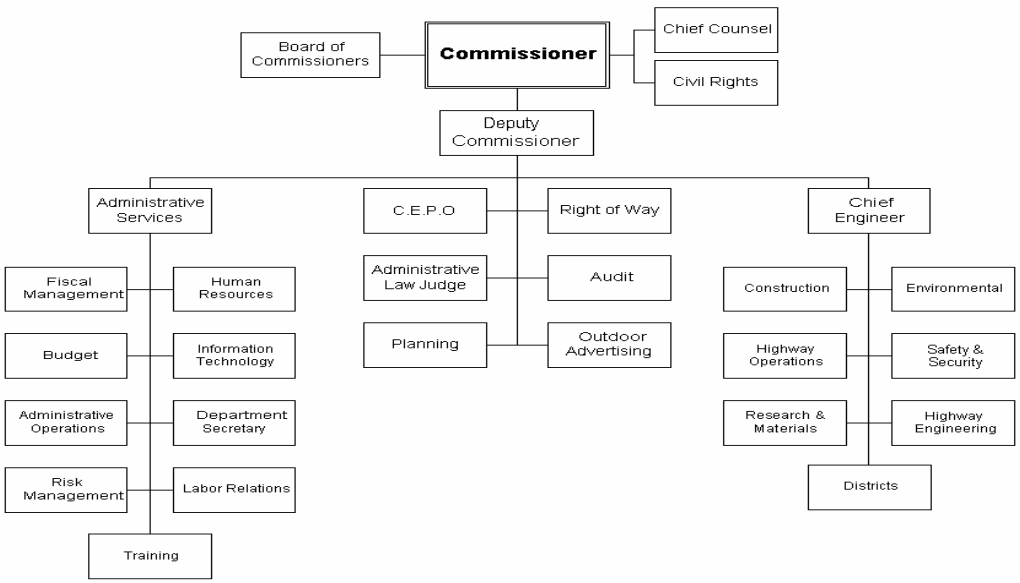
EPA Region 1 developed a "NPDES General Permit for Storm Water Discharges from Small Municipal Separate Storm Sewer Systems". The permit was issued in the Federal Register on May 1, 2003 and will be in effect for five years, until May 1, 2008. The Notice of Intent required by the permit must be submitted no later than July 30, 2003. In Massachusetts, the general permit has been issued jointly by EPA and Massachusetts DEP. The permit is issued as a NPDES permit under the Federal Clean Water Act by EPA and as a state Section 401 Water Quality Certification for MA DEP.

In recognition of the differences between federal or state-operated MS4 versus their municipal counterparts, the general permit includes separate requirements for Massachusetts Small MS4s, New Hampshire Small MS4s (including Indian Lands in MA, CT and RI), Non-Traditional MS4s (e.g., schools, prisons, hospitals) and Transportation MS4 owners. The Storm Water Management Program described in this document has been prepared to comply with the overall general permit and specifically Part V - Transportation MS4 Storm Water Management Program.

2.2 MassHighway Department Structure

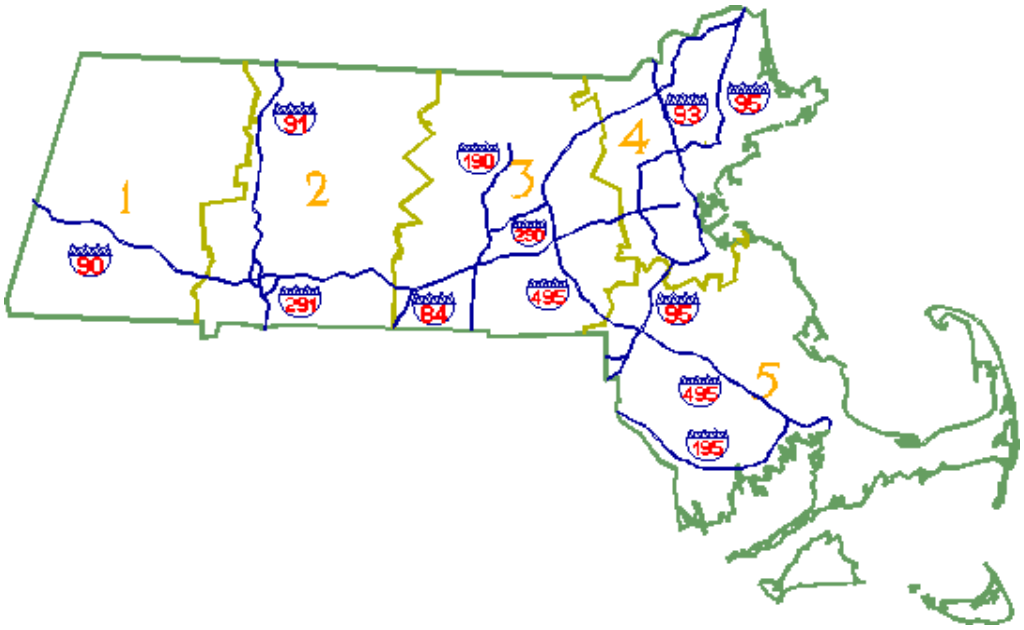
MassHighway is separated into several sections/ divisions. Figure 2-1 summarizes the Department's organizational chart.

Figure 2-1: MassHighway Organizational Chart



The department is divided into five districts for operation and maintenance purposes. Figure 2-2 depicts the five districts.

Figure 2-2: MassHighway Maintenance Districts



2.3 Urbanized Areas

EPA has required that all separate storm sewer system within urbanized areas owned and operated by MassHighway must be included in the SWMP. "Urbanized Area" is defined as a land area comprising one or more places —central place(s) — and the adjacent densely settled surrounding area — urban fringe — that together have a residential population of at least 50,000 and an overall population density of at least 1,000 people per square mile. The urbanized area (UA) designation is based on the results of the latest census – the 2000 Census for this permit. For the 2000 Census, the urbanized area delineations constitute a "zero-based" approach that requires no "grandfathering" of urbanized area boundaries from the 1990 Census. Because of the more stringent density requirements (and the less restrictive extended place criteria), some territory that was classified as urbanized for the 1990 census has been reclassified as rural.

As indicated in Table 2-1 and shown in Figure 2-3 and Figure 2-4, the area classified as urbanized within Massachusetts increased significantly between the 1990 and 2000 census, both in percentage of the state classified as urbanized and the regional spread of

these areas. MassHighway anticipates that this trend will continue in future census. Therefore, we have focused most of the proposed programs (as budget and personnel allow) to address storm water on a statewide basis instead of just in the areas currently designated as urbanized.

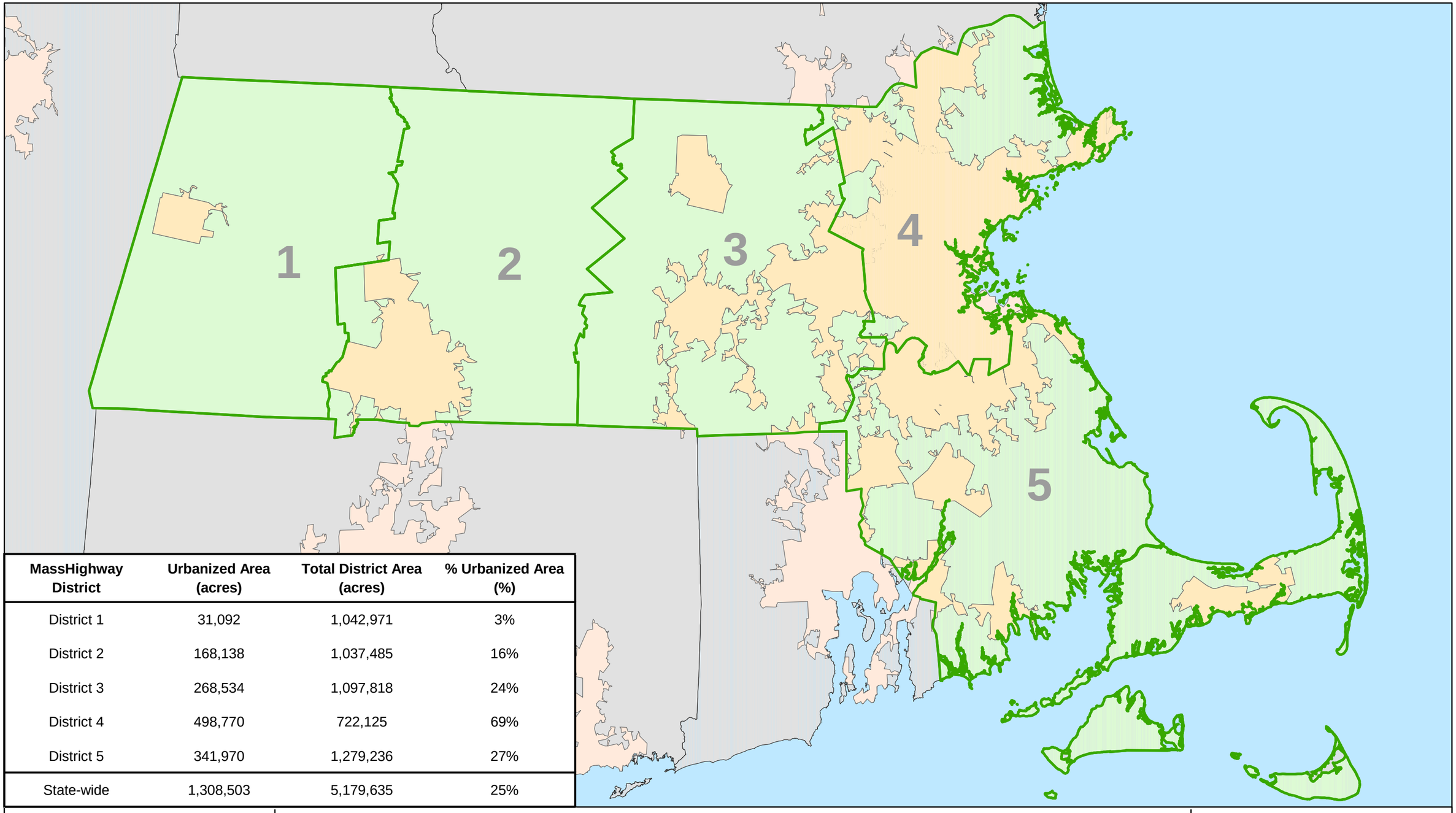
Table 2-1: Massachusetts' Urbanized Areas (UA) in 1990 and 2000 Census

MassHighway District	District Area (acres)	1990 Census Urbanized Area		2000 Census Urbanized Area	
		(acres)	(%)	(acres)	(%)
District 1	1,042,971	31,092	3	43,896	4
District 2	1,037,485	168,138	16	187,618	18
District 3	1,097,818	268,534	24	478,232	44
District 4	722,125	498,770	69	559,209	77
District 5	1,279,236	341,970	27	709,411	55
Statewide	5,179,635	1,308,503	25	1,978,366	38

Table 2-2: Road Miles within Urbanized Areas by Maintenance District[1]

MassHighway District	Estimated Road Miles	Estimated Road Miles within Urbanized Areas	% within Urbanized Area
District 1	354	19	5
District 2	570	177	31
District 3	825	463	56
District 4	1,081	924	86
District 5	1,303	802	62
Statewide	**4,132**	**2,385**	**58**

[1] **2000 Census**



MassHighway District	Urbanized Area (acres)	Total District Area (acres)	% Urbanized Area (%)
District 1	31,092	1,042,971	3%
District 2	168,138	1,037,485	16%
District 3	268,534	1,097,818	24%
District 4	498,770	722,125	69%
District 5	341,970	1,279,236	27%
State-wide	1,308,503	5,179,635	25%

Legend

N W E S

Mass Highway Districts

Urbanized Areas - 1990 Census

Massachusetts' Urbanized Areas - 1990 Census

NPDES Phase II Permitting

Massachusetts Highway Department

10 Park Plaza, Boston, MA 02116

0 5 10 20 30 40 50 Miles

Scale: 1:850,000 April 2003

NOTE:
1. The 1990 Census Urbanized Area boundary provided by US Census Bureau.
2. District boundaries provided by Mass Highway.

MASS HIGHWAY

Figure 2-3

1

2

3

4

5

MassHighway District	Urbanized Area (acres)	Total District Area (acres)	% Urbanized Area (%)
District 1	43,896	1,042,971	4%
District 2	187,618	1,037,485	18%
District 3	478,232	1,097,818	44%
District 4	559,209	722,125	77%
District 5	709,411	1,279,236	55%
State-wide	1,978,366	5,179,635	38%

N
W E
S

Legend

Mass Highway Districts

Urbanized Areas - 2000 Census

Massachusetts' Urbanized Areas - 2000 Census

NPDES Phase II Permitting

Massachusetts Highway Department

10 Park Plaza, Boston, MA 02116

0 5 10 20 30 40 50 Miles

Scale: 1:850,000 April 2003

NOTE:
1. The 2000 Census Urbanized Area boundary provided by US EPA Region One.
2. District boundaries provided by Mass Highway.

MASS HIGHWAY

Figure 2-4

2.4 Storm Water Pollution Prevention Team

MassHighway staff created a working committee to prepare the Storm Water Management Plan (SWMP). The committee included staff from each of the districts and the maintenance, environmental and construction sections. The committee worked diligently to create a SWMP that reflected the many on-going storm water related programs and policies and to propose programs that were reasonable within the tight budget and staff constraints of the department. This working committee will continue to lend their expertise and experience to the SWMP during implementation by continuing their role as the MassHighway Storm Water Pollution Prevention Team.

The Team will be responsible for:

- Annual evaluation of the continued applicability of the measurable goals for each of the six minimum control measures with input from the MassHighway section/ division(s) responsible for the measurable goal. Based on this evaluation, the annual report may include a recommendation for revising, adding, or deleting measurable goals from the Storm Water Management Plan.
- Preparation and submittal of annual reports to EPA. Annual reports will include a narrative and/or numerical summary of how MassHighway has met the measurable goals for each of the six minimum controls over the last year, and an evaluation of current BMPs and measurable goals.
- The Chairman will be responsible for the overall coordination of the Storm Water Management Program.

Implementation and coordination of each of the measures described in the Storm Water Management Plan will be the responsibility of the Section/ Division(s) indicated in the SWMP Summary schedule.

The following individuals currently serve on the MassHighway Storm Water Pollution Prevention Team:

Henry Barbaro, Supervisor of Wetlands & Water Resources - **Chairman**
MassHighway – Environmental Section
10 Park Plaza - Room 4260
Boston, MA 02116
(617) 973-7419 phone
(617) 973-8879 fax
Henry.Barbaro@state.ma.us

Patricia Trombly, Director of Environmental Programs
MassHighway – Construction Division
10 Park Plaza - Room 4260
Boston, MA 02116
(617) 973-7309 phone
(617) 973-8040 fax
patricia.trombly@state.ma.us

Mark Moore, District Environmental Engineer
MassHighway – District 1
270 Main Street
Lenox, MA 01240
(413) 637-1750 phone
(413) 637-0309 fax
mark.moore@state.ma.us

Timothy Meyer, District Environmental Engineer
MassHighway – District 2
811 North King Street
Northampton, MA 01060
(413) 584-1611 phone
(413) 584-8194 fax
timothy.meyer@state.ma.us

Ann Sullivan, District Environmental Engineer
MassHighway – District 3
403 Belmont Street
Worcester, MA 01604
(508) 929-3868 phone
(508) 799-9763 fax
ann.sullivan@state.ma.us

Robert Boone, District Environmental Engineer
MassHighway – District 4
519 Appleton Street
Arlington, MA 02174
(781) 641-8472 phone
(781) 646-5115 fax
robert.boone@state.ma.us

Thomas McGuire, District Environmental Engineer
MassHighway – District 5
1000 County Street
Taunton, MA 02780
(508) 884-4250 phone
(508) 880-6102 fax
thomas.mcguire@state.ma.us

Sam Salfity, Facilities Engineer
MassHighway - Operations
10 Park Plaza – Room 7410
Boston, MA 02116
(617) 973-7305 (phone)
bassam.salfity@state.ma.us

2.5 SWMP Certification

According to Part 1.E.1.i of the permit, the following certification must be signed by MassHighway:

> *I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, I certify that the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.*

A signed certification of this Storm Water Management Plan is found immediately following the title page of this document.

EPA's Response to Comments document for this general permit indicates that in regards to the Endangered Species Act, this certification "*should be based on the permittee's knowledge at the time of submission of the Notice of Intent (NOI). MS4 operators should make determinations based on current information. As a permittee implements its storm water management program, new information regarding locations of outfalls may become available. As the new information becomes available, the permittee may need to reevaluate the ESA certification criterion to ensure that permit eligibility with regards to ESA is maintained.*" MassHighway is not currently aware of any discharges that are impacting federal or state-listed endangered species

habitat. As discussed in Section 4.0, as discharges are identified during the permit, they will be reviewed for compliance with the endangered species programs.

EPA's Response to Comments document also indicates that regarding the National Historic Preservation Act (NHPA) the permittee "*should submit the NOI based on the best information available at the time of submission. As the program develops new information may become available. As the new information becomes available, the permittee may need to reevaluate the National Historic Preservation Act (NHPA) certification to ensure that permit eligibility with regard to NHPA is maintained.*" MassHighway is not currently aware of any discharges that are impacting places listed or eligible for listing on the national Register of Historic Places. As discussed in Section 4.0, as discharges are identified during the permit they will be reviewed for compliance with NHPA.

2.6 Storm Water Management Program

The remainder of the document describes MassHighway's Storm Water Management Program. MassHighway currently implements many practices, policies, guidelines and programs that relate to pollution prevention and storm water management. This plan will outline each of these ongoing activities and discuss future activities, which will be implemented in the five-year permit term. The program will cover all of the department's highways, roadways, bridges, rest areas and maintenance facilities within the urbanized areas.

3.0 MINIMUM CONTROL MEASURES

The following section describes control measures MassHighway will implement to satisfy conditions of the National Pollution Discharge Elimination System (NPDES) Phase II permit requirements for transportation MS4s. EPA requires compliance with six minimum control measures including:

- Public education and outreach;
- Public involvement/participation;
- Illicit discharge detection and elimination;
- Construction site runoff controls;
- Post-construction runoff controls; and
- Pollution prevention/good housekeeping.

The permit requires that the permittee identify for each minimum control measure:

(a) The person(s) or department responsible for the minimum control measure.

(b) Best Management Practices (BMPs) for the minimum control measure. Time lines and milestones for implementation of BMPs.

(c) Measurable goals for each BMP and, if appropriate, an overall goal for each measure.

The BMPs and measurable goals for each control measure are addressed in detail within this section. Section 6.0 of this document summarizes the BMPs and measurable goals identified for each minimum control measure and outlines the MassHighway Section/ Division responsible for implementing each of the programs and meeting the measurable goals and program time lines.

3.1 Public Education and Outreach

EPA Minimum Control Requirement: According to the NPDES Phase II permit, in order to meet the Public Education and Outreach minimum control requirement, the operator of the transportation MS4 "…must implement a public education program to distribute educational material to the community. For the purposes of this permit, a community consists of the people who use the facility. For a transportation agency, this would include employees, contractors, and general public. The public education program must provide information concerning the impact of storm water discharges on water bodies. It must address steps and/or activities that the community can take to reduce the pollutants in storm water runoff.

The following should be included in education and outreach efforts:

(a) information regarding activities that occur within the facility, including illegal dumping into storm drains.

(b) coordinate activities with local groups (i.e. watershed associations, or schools).

(c) materials for outreach/education may include, but are not limited to, pamphlets; fact sheets; brochures; public service announcements; storm drain stenciling and newspaper advertisements.

(d) encourage cooperative efforts with neighboring municipalities, watershed associations and others."

Current MassHighway Programs: Public education efforts implemented or supported by MassHighway may reduce pollutant loads discharge via MassHighway storm drains. MassHighway participates in programs that provide storm water related education to MassHighway staff, municipal DPWs, and the general public. MassHighway feels that the current programs in place adequately meet the public education minimum control measure and will continue these effective programs. Examples of current programs or activities, which provide public education and outreach, include:

A. *MassHighway Training Assistance Program (MTAP) and Baystate Roads Program* -- MassHighway funds training programs through the MassHighway Training Assistance Program (MTAP) and Baystate Roads Program (Baystate). These programs provide training to MassHighway and municipal DPW staff and include workshops and seminars addressing storm water management, wetland protection, hazardous waste, and related issues. MassHighway has recently

provided training on the MassHighway Storm Water Handbook through the MTAP program.

B. *MassHighway Web Site* – MassHighway currently maintains a web site that provides interested parties with information regarding the MassHighway organization, alternative transportation, special environmental programs and projects.

Proposed Programs: MassHighway plans to comply with the public education and outreach minimum control measure by continuing the current programs discussed above and provide additional impact by implementing the following proposed programs during the permit term:

1. *MassHighway Environmental Section Web Page* - Expand the MassHighway web site to provide the public additional access to information by adding an Environmental Section web page. The web page will be used to solicit public input and publicize storm water related initiatives. The web page will be evaluated annually and revised as necessary.

2. *Storm Water Training Workshop* - Conduct a storm water training workshop, through MTAP for MassHighway personnel and the Baystate Roads Program for municipal DPW personnel. Training workshops will be conducted every other year (Years 2 & 4) at multiple locations across the state. MassHighway will revisit after Year 4 whether this training schedule is appropriate.

3. *Construction Industries of Massachusetts Journal Article* – Prepare and submit an informational article for publication in the Construction Industries of Massachusetts journal detailing the construction requirements under Phase II and the MassHighway procedures to be implemented and followed by all construction contractors performing work under MassHighway construction contracts. EPA and DEP have been contacted to contribute to this article.

4. *Municipal/ MassHighway Drainage Tie-in Review* – MassHighway will develop a communication mechanism for receiving concerns from municipalities regarding MassHighway drainage which discharges to a local MS4. Concurrently, MassHighway will develop a review process for addressing the concerns expressed. As soon as the communication mechanism and review process are in place, MassHighway will notify the municipalities.

3.2 Public Participation/ Involvement

EPA Minimum Control Requirement: According to the NPDES Phase II permit "all public involvement activities must comply with state public notice requirement.

(a) The permittee must provide opportunity for the public to participate in the development, implementation and review of the storm water management program. In Massachusetts, the public notice requirements are at Chapter 39, Section 23B."

Current MassHighway Programs: State and local public notice requirements allow for significant public involvement opportunities as part of transportation planning and project review. MassHighway also encourages public involvement in the pollution reduction activities sponsored by the department. The public is an important part of both source reduction and clean up. The following programs currently address the public participation/involvement minimum requirement:

A. *Project Related Public Notice/Public Participation* -- As a public agency, MassHighway complies with state public notice requirements. Public notice and participation also are an integral part of the requirements of the Massachusetts Wetland Protection Act (WPA), Clean Water Act's (CWA) Water Quality Certification (401 permit), Army Corps of Engineers 404 permit, and Massachusetts Environmental Policy Act (MEPA). Almost all MassHighway projects are subject to at least one of these regulations. Notices of public hearings are posted on the MassHighway web site.

B. *Adopt-a-Highway Program* – A nationwide program whereby organizations and businesses adopt a stretch of highway or rest area/ visibility site, and participate in litter control and other enhancement projects. The program provides an opportunity for environmentally conscious groups and corporations to participate in keeping Massachusetts' roads litter-free. In recognition of the efforts, MassHighway installs a sign recognizing the adopting group for their contribution toward keeping Massachusetts clean.

C. *Project Clean* -- MassHighway supports the enforcement of State litter laws by providing signage within the highway right-of-way, and encouraging roadway users to notify MassHighway of litter and debris along the roadway through Project Clean. Keeping our roadways clean carries a high priority at MassHighway. By calling #321 on a cellular phone or 1-888-359-9595 on a standard phone, people can act as roving patrollers and keep MassHighway informed of unsightly litter and debris. MassHighway crews are then dispatched to clean up the litter or to take other necessary actions. Project Clean currently tracks the number of calls received, the nature of the call and the follow-up action taken by the Highway crews.

Proposed Programs: MassHighway believes that the current programs in place are effective and adequately meet the public participation/ involvement minimum control measure. In addition to continuing these effective programs, MassHighway will implement the following program during the permit term:

1. *MassHighway Web Site*

   (a) The Storm Water Management Plan (SWMP) will be posted on the MassHighway web site within 30 days of being submitted. There will be public notice posted that the SWMP is on the web page available for public review.

   (b) Annual reports prepared each year will be posted on the Environmental Section's web page so the public is aware of MassHighway's progress towards meeting the measurable goals indicated in the SWMP.

3.3 Illicit Discharge Detection and Elimination

EPA Minimum Control Requirement: The NPDES Phase II permit indicates that the permittee must develop, implement and enforce a program to detect and eliminate illicit discharges. An illicit discharge is any discharge to a municipal separate storm sewer system (MS4) that is not composed entirely of storm water. Exceptions are discharges that have been previously permitted under NPDES, allowable non-storm water discharges described at Part I.F (see Table 3-1 for examples) and discharges resulting from fire fighting activities. The minimum control measures include:

(a) If not already existing, the permittee must develop a storm sewer system map. At a minimum, the map must show the location of all outfalls and the names of all waters that receive discharges from those outfalls. Due to the magnitude of a transportation agency's drainage system, identification of outfalls may be done on a district basis, and as part of construction and redevelopment projects.

Additional elements may be included on the map, such as, location of catch basins, location of manholes, and location of pipes within the system. Initial mapping should be based on all existing information available to the permittee including project plans, agency records, city records, and drainage maps. Field surveys may be necessary to verify existing records and locate all outfalls.

(b) To the extent allowable under state law, the permittee must effectively prohibit, through a regulatory mechanism, non storm water discharges into the system and implement appropriate enforcement procedures and actions. If a regulatory mechanism does not exist, development and

adoption of such a mechanism must be included as part of the storm water management program.

The permittee should evaluate existing procedures, policies and authorities pertaining to connections to its separate storm sewer system. If an illicit discharger fails to comply with procedures or policies established by the agency, the permittee may seek assistance from EPA or the state environmental agency in enforcing this provision of the permit.

(c) The permittee must develop and implement a plan to detect and address non-storm water discharges, including illegal dumping, into the system. The illicit discharge plan must contain the following elements:

i. Procedures to identify priority areas. This includes areas suspected of having illicit discharges, for example: older areas of a city, areas of high public complaints, and areas of high recreational value or high environmental value such as beaches and drinking water sources.

ii. Procedures for locating illicit discharges (i.e. visual screening of out falls for dry weather discharges, dye or smoke testing).

iii. Procedures for locating the source of the discharge and procedures for the removal of the source.

iv. Procedures for documenting actions and evaluating the impact on the sewer system subsequent to the removal.

(d) The permittee must inform users of the system and the general public of hazards associated with illegal discharges and improper waste disposal. The permittee must train field inspectors to recognize illicit discharges.

(e) The non-storm water discharges listed in EPA's Part I.F. (see Table 3-1 for examples) must only be addressed if they are identified as significant contributors of pollutants.

Table 3-1: EPA Allowable Non-Storm Water Discharges*

♦ Water line flushing;	♦ Irrigation water;
♦ Landscape irrigation;	♦ Springs;
♦ Diverted stream flows;	♦ Water from crawl space pumps;
♦ Rising groundwaters;	♦ Footing drains;
♦ Uncontaminated groundwater infiltration (e.g. highway subdrains);	♦ Lawn watering;
♦ Uncontaminated pumped groundwater;	♦ Individual resident car washing;
♦ Discharges from potable water sources;	♦ Flows from riparian habitats and wetlands;
♦ Foundation drains;	♦ Dechlorinated swimming pool discharges;
♦ Air conditioning condensation;	♦ Street wash water; and
♦ Residential building wash waters, without detergents.	

* *MassHighway requirements may be more restrictive*.

Discharges or flows from fire fighting activities occur during emergency situations. The permit does not require that fire fighting discharges be evaluated with regard to pollutant contributions and are authorized as non-storm water discharges by the permit unless identified by EPA as significant sources of pollutant to Waters of the United States.

Current MassHighway Programs: The following current programs have begun to address the illicit discharge detection and elimination minimum requirement:

A. *Lower Charles River Discharge Inventory and Illicit Connection Review* - Between 1997 and 2000, MassHighway undertook a detailed mapping and inspection program in the lower Charles River watershed, including the Charles River below the South Natick Dam and primary tributaries. Of the 299 storm drains inspected, MassHighway crews observed dry weather flows at 27 discharges (9% of the discharges). Follow-up investigations determined that none of the suspect dry weather flows were related to physical illicit connections. Instead, MassHighway noted two instances of one-time release or discharge into storm drains and the remaining were groundwater inflows to the pipes. One release was a minimal discharge of gasoline or oil, as might be associated with a vehicle accident or breakdown, and the other a turbid discharge possibly related to construction vehicle wash down.

B. *Cambridge Watershed Hazardous Materials Emergency Response Atlas* – MassHighway prepared an emergency response atlas for the section of Route 128 and Route 2 which runs along the Cambridge Reservoir. The atlas includes a series of maps illustrating the storm water conveyance system in this area and is used in the case of a spill. The atlas can quickly show the emergency response personnel where the spilled material will travel if it has reached the storm water conveyance system, allowing them to either block the entrance(s) to the system (thereby containing the spill) and/or quickly access any material which has already accessed the system.

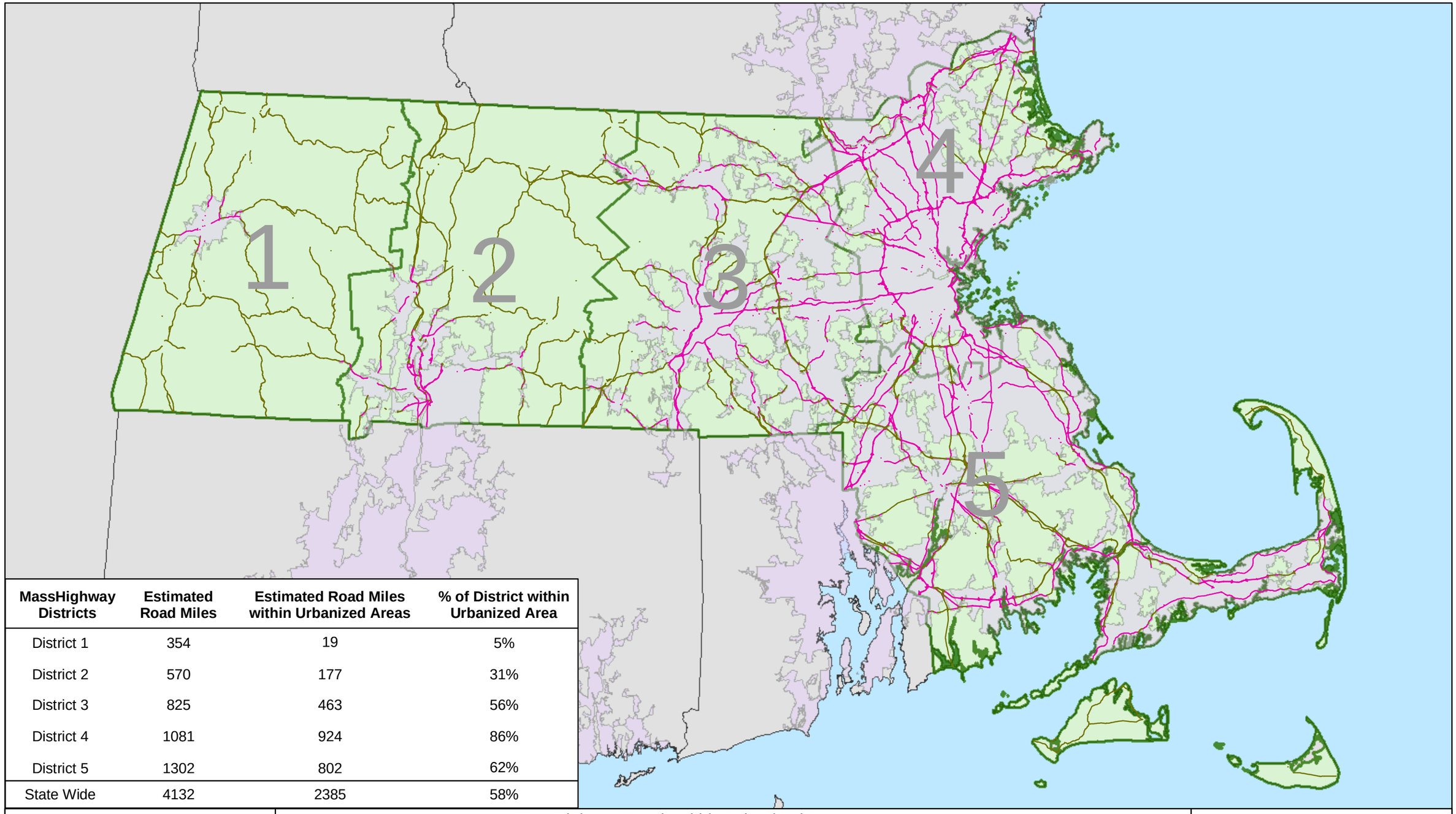
Proposed Programs: According to the EPA regulations, MS4s must inventory all storm water systems within "urbanized areas" (UA). The regulation definition of an urbanized area is "*a land area comprising one or more places - central place(s) - and the adjacent densely settled surrounding area - urban fringe - that together have a residential population of at least 50,000 and an overall population density of at least 1,000 people per square mile*". This designation is based on the 2000 census. Figure 3-1 illustrates the MassHighway-owned roadways within urbanized areas. Approximately 2,385 miles of MassHighway roads are subject to the inventorying analysis.

MassHighway plans to inventory the discharges within urbanized areas by the end of the permit term. The program is discussed in further detail in the following narrative:

1. *Rest Area Leases* – MassHighway will develop new language, to be incorporated into Rest Area lease agreements where the site is to be redeveloped, that will require tenants to provide an electronic inventory of all drainage structures (e.g., catch basins, pipes, detention basins and outfalls) as well as drainage boundaries, sheet flow direction, and pipe flow directions.

2. *Drainage Inventory* – The drainage inventory of discharges from MassHighway roads within urbanized areas will be completed through a series of programs discussed below:

   (a) MassHighway will develop and add a Drainage Inventory Specification to future construction and redevelopment projects. Redevelopment projects will be limited to pavement resurfacing, reclamation, shoulder widening with drainage improvements; intersection redesign; road profile improvements; drainage improvements; culvert replacement; and footprint bridge projects.



MassHighway Districts	Estimated Road Miles	Estimated Road Miles within Urbanized Areas	% of District within Urbanized Area
District 1	354	19	5%
District 2	570	177	31%
District 3	825	463	56%
District 4	1081	924	86%
District 5	1302	802	62%
State Wide	4132	2385	58%

Legend

- Mass Highway Districts
- Urbanized Areas
- Roads Not Within Urbanized Areas
- Roads Within Urbanized Areas

N W E S

MassHighway Roads within Urbanized Areas

NPDES Phase II Permitting
Massachusetts Highway Department
10 Park Plaza, Boston, MA 02116

0 5 10 20 30 40 50 Miles

Scale: 1:850,000 January 2003

NOTE:
Map Produced from Massachusetts Highway Department Roads datalayer from the MassGIS website. Plan only shows roadway designated as owned by MassHighway. The Urbanized Area boundary provided by US EPA Region One.

MASS HIGHWAY

Figure 3-1

(b) MassHighway will also populate the drainage inventory from rest area lease renewal submissions when redevelopment of the site is proposed.

(c) For sections of roadway where information is not gathered in the previous steps, MassHighway will populate the database through field inventories within each district.

3. *Illicit Drainage Connection Policy* – MassHighway has created an Illicit Drainage Connection Policy prohibiting illicit discharges to the MassHighway storm water system. This policy will soon be finalized, submitted to the Chief Engineer and Commissioner and then issued to the Department.

4. *Drainage Tie-In Standard Operating Practice* - MassHighway is in the process of reviewing the Standard Operating Practice (SOP) regarding drainage tie-ins. The Drainage Tie-In SOP is being revised to discourage connection to the MassHighway drainage system by private landowners and to prohibit non-storm water discharges except as allowed in the NPDES general permit. The revised SOP will be submitted to the Chief Engineer for approval and issuance statewide.

5. *Illicit Connection Sampling Program* – MassHighway will review twenty (20) discharges each permit year for potential illicit connections. The discharges reviewed will be based on dry weather flows identified during the field inventories or by MassHighway staff during routine operations. Dry weather flows will be sampled. A summary of the discharges reviewed will be included in that year's annual report.

   Sample analysis of the dry weather flows collected may include constituents such as fecal coliform, ammonia-nitrogen, surfactants, TSS, pH and specific conductivity, which will allow MassHighway to compare the values to those expected in groundwater. For those discharges with constituents exceeding expected groundwater values (i.e., potential illicit connections), MassHighway will conduct further investigation.

   Additional investigation may include further site visits, dye testing, and/or smoke testing to determine the source of the dry weather flows. Once the source is identified, the property owner will be notified of the problem by MassHighway and requested to remedy the problem or apply for a permit. If the property owner fails to correct the problem in a timely fashion and effective manner, MassHighway will coordinate with the municipal DPW and disconnect the connection. If the source of the flow is from a MassHighway property, correcting the illegal connection will become a priority project within the District.

Table 3-2 summarizes the schedule for implementation of the measurable goals for Minimum Control Measure 3. This schedule will be dependent upon available funding and personnel. The schedule will be updated in annual reports if changes are made.

Table 3-2: Min. Control Measure 3 Implementation Schedule

BMP ID#	BMP/ Measurable Goal	Target Date	Responsible Department
3A	Rest Area Lease Agreement requiring drainage information to be submitted for redevelopment conditions	April 2005	Env. Section
3B-1	Develop and include specification for securing drainage information from future construction and redevelopment projects.	April 2006	Env. Section./ Projects/ Construction
3B-2	Complete field program mapping discharges from roads within urbanized areas.	March 2008	Env. Section
3C-1	Submit Illicit Drainage Connection Policy to Chief Engineer and Commissioner for issuance to Department.	March 2005	Env. Section
3C-2	Submit Drainage Tie-In SOP to Chief Engineer and Commissioner for issuance to Department.	February 2007	Env. Section
3D	Review twenty discharges each year for potential illicit connections.	March 2008	Env. Section/ Districts

3.4 Construction Site Runoff Control

EPA Minimum Control Requirement: According to the NPDES Phase II permit, "the permittee must develop, implement, and enforce a program to reduce pollutants in any storm water runoff to the MS4 from construction activities that result in a land disturbance of greater than or equal to one acre." The permittee must include disturbances less than one acre if part of a larger common plan.

The permittee does not need to apply its construction program provisions to projects that receive a waiver from EPA under the provisions of 40 CFR§122.26(b)(15)(i).

At a minimum, the program must include:

(a.) To the extent allowable under state law, a regulatory mechanism to require sediment and erosion control at construction sites. If such a mechanism does not exist, development and adoption of a mechanism must be part of the program. If attempts to enforce this part of their program are ineffective, the permittee may seek assistance from EPA or the state agency for enforcement of this provision.

(b.) Sanctions to ensure compliance with the program. Sanctions may include both monetary or non-monetary penalties. The transportation agency can consider

withholding payment to contractors who fail to implement appropriate sediment and erosion control plans.

(c.) Requirements for construction site operators to implement a sediment and erosion control program that includes best management practices that are appropriate for the conditions at the construction site. The Massachusetts Erosion and Sediment Control Guidelines for Urban and Suburban Areas may be used as a tool to implement this provision.

(d.) Require control of wastes, including but not limited to, discarded building materials, concrete truck wash out, chemicals, litter, and sanitary wastes.

(e.) Procedures for site plan review including procedures which incorporate consideration of potential water quality impacts. The site plan review should include procedures for pre-construction review.

(f.) Procedures for receipt and consideration of information submitted by the public. This may include the opportunities for public comment during the project development process.

(g.) Procedures for inspections and enforcement of control measures at construction sites.

Current MassHighway Programs: MassHighway is responsible for the construction and maintenance of State highways. It is important to note that not all major roadways or numbered routes are under the jurisdiction of the MassHighway Department. A portion of these roadways and routes are under the jurisdiction of other state agencies, such as the Metropolitan District Commission (MDC), the Department of Environmental Management (DEM) and the Massachusetts Turnpike Authority. A large number of roadway segments, including numbered routes, are under the jurisdiction of the municipalities. However, MassHighway may oversee design and construction on these roadways if they are eligible for certain federal and/or state funds. MassHighway currently implements the following programs which address construction site runoff in all MassHighway projects:

A. *MassHighway Department Highway Design Manual* -- Drainage systems for MassHighway operated roadways are designed to standards derived from the MHD Highway Design Manual, Chapter 10: Drainage and Erosion Control (which is periodically updated). The design of a particular drainage system is almost entirely dependent upon physical site conditions and cost.

B. *Compliance with Regulatory Programs* -- As standard practice, MassHighway employs the use of sediment and erosion control measures throughout its construction projects. Associated regulatory programs include the following:

(1) MA DEP Stormwater Management Policy -- Most new construction and redevelopment activities undertaken by MassHighway are currently subject to the Massachusetts DEP's Stormwater Management Policy and Performance Standards through the Wetlands Protection Act and Clean Water Act Section 401 Water Quality Certification. The DEP Stormwater Management Policy meets the minimum requirements set forth by the EPA for construction runoff control.

(2) NPDES Storm Water General Construction Permits -- In Massachusetts, the EPA is the delegating authority for NPDES construction permits. The key condition of the CGP is the development and implementation of a construction storm water pollution prevention plan (SWPPP). EPA encourages multiple operators at a construction site to develop a comprehensive SWPPP.

For projects which are advertised for construction by MassHighway and which disturb five acres or more, the construction contract includes a Bid Item and Special Provision requiring the Contractor to prepare a SWPPP in accordance with the current NPDES Construction General Permit, comply with the conditions of the general permit including the performance of inspections and perform all corrective actions as necessary to comply with the General Permit, SWPPP, and any federal and state environmental permits issued to the project.

(3) Other state and federal environmental regulations or policy -- The Wetland Protection Act, Water Quality Certification, and Army Corps of Engineers 404 permit regulations all require appropriate erosion controls to be in place and maintained throughout the life of the project.

C. *MassHighway Storm Water Handbook* – MassHighway has recently completed an extensive effort in preparing a Stormwater Handbook for roadway designers, public works personnel, and other persons involved in the design, permitting, review, and implementation of highway and bridge improvement projects in the Commonwealth of Massachusetts. The objective of this Handbook is to provide guidance in the development of cost-effective storm water management strategies for highway projects to comply with the DEP Stormwater Management Policy. The Handbook focuses on the unique constraints of existing roadways. It provides guidance for storm water management practices readily and reasonably applicable to highway improvement projects and new construction. In order to comply with NPDES Phase II requirements, MassHighway has expanded the use of the Handbook within the Department to include all urbanized areas regulated under the NPDES general permit. This change extends compliance with the Storm Water Policy to projects within urbanized areas, in addition to those subject to the

Wetlands Protection Act. The Handbook was released in 2002. MassHighway requires that all new construction or redevelopment activities undertaken by others that are funded in whole or in part by MassHighway comply with the Handbook.

D. *MassHighway Standard Specifications for Highways and Bridges* - All projects advertised for construction by MassHighway require the Contractor to follow the Standard Specifications for Highways and Bridges. Section 7.0 of the Specifications, entitled "Legal Relations and Responsibility to the Public" establishes general requirements for erosion control and protection of water quality. Subsection 7.02, entitled "Prevention of Water Pollution," establishes general standards and authorizes the MassHighway Engineer to order specific actions to control erosion and prevent pollution of water resources from the construction activities.

E. *MassHighway Research Needs Program* -- MassHighway contracts with the University of Massachusetts for various research projects pertinent to the Department's responsibilities. Several research projects have been conducted which are applicable to storm water control and pollution prevention, including an analysis of street sweepings from various categories of roadways. Based on this study, the Massachusetts Department of Environmental Protection was able to promulgate a Policy for Beneficial Use of Street Sweepings from specific categories of roadways. This has led to significant cost savings for both the state and the municipalities and has reduced the need for landfill disposal of this material. Currently, a proposal to study the use of composted wood chip filter berms for erosion control has been incorporated into the Research Needs Work Program.

Proposed Programs: MassHighway plans to comply with the Construction Site Runoff Control minimum control measure by continuing the current programs and implementing the following programs during the permit term:

1. *NPDES Phase II Notice* – After the NPDES General Permit for Storm Water Discharges from Construction Activities is issued for both small and large construction activities in Massachusetts (currently only large construction activities), MassHighway will develop and distribute a Notice from the MassHighway Chief Engineer to all pre-qualified Construction Contractors regarding the NPDES Phase II Construction Requirements.

2. *Contract Bid Item and Special Provisions* - After the NPDES General Permit for Storm Water Discharges from Construction Activities is issued for both small and large construction activities in Massachusetts (currently only large construction activities), MassHighway will prepare a Contract Bid Item and Special Provision

for inclusion in construction contracts to be advertised for bid which exceed the one-acre disturbance threshold. The Bid Item and Special Provision will address preparation of a Storm Water Pollution Prevention Plan (SWPPP) and compliance with the Construction General Permit provisions.

3. *Field Guide on Erosion Prevention and Sediment Control* - Finalize and disseminate a Field Guide on Erosion Prevention and Sediment Control to MassHighway construction personnel. The purpose of this field guide will be to provide information on the range of site conditions which require erosion and sediment control, provide technical detail on the individual controls, including proper installation, maintenance and removal. The guide will also provide a matrix matching typically encountered site conditions with erosion controls proven to be effective. The intent of the guide is not to substitute as a manual on pollution prevention and water quality, but rather provide the field personnel overseeing construction with a readily available tool to identify what conditions need to be addressed and what controls work effectively for those conditions.

4. *Storm Water Pollution Prevention Plan (SWPPP) Template*

   (a) MassHighway has begun to prepare a Storm Water Pollution Prevention Plan (SWPPP) template for use by Contractors on MassHighway construction projects. The SWPPP template will consist of three sections.

   The first section – Environmental Site Data Form - will identify the pertinent environmental and related information for the specific project area. This will include information on receiving waters (e.g., impaired waters and TMDLs, critical habitat, etc.), as applicable. The project designer will be responsible for collecting this information and reporting it on the Environmental Site Data Form. Making the project designer responsible for collecting this information will be beneficial in that it can be used as a basis for design decisions (and not just to alert the Construction Contractor that he is in a sensitive area).

   The second section will be boilerplate text, including the General Permit Conditions and conditions and performance standards which MassHighway expects to be met on all projects. The benefit of this section is that it provides consistency in submissions under the General Permit, insures that all appropriate conditions are stipulated, and – since there will be a Bid Item to complete the SWPPP in each contract proposal advertised for bid – all Contractors will be aware of the conditions and expectations of the General Permit and MassHighway prior to submitting a bid.

The third section will be completed by the Contractor awarded the construction contract. This will require information on schedule, anticipated site conditions, additional erosion controls needed to address the site conditions, etc. It is critical that the Contractor provide this information given that he, not the Department nor the designer, knows how the work will be scheduled, in what order, and for what length of time.

(b) Once contractors begin to use the template, it may be revised if necessary to address input received internally and from agencies.

(c) Ultimately, convert the SWPPP template to a computer program which can be accessed through the MassHighway web site so that all information can be processed electronically.

5. *Annual Erosion Prevention/ Sediment Control Training* - Conduct annual erosion prevention/sediment control training for MassHighway Construction personnel. MassHighway performs construction contract oversight through five District offices. Each winter, as projects shut down or work is limited, workshops are provided to construction personnel on various topics of concern. These topics include technical and engineering topics as well as regulatory information. A workshop will be developed and revised as necessary to cover water quality regulatory programs, including NPDES, and information on proper erosion control techniques.

6. *Erosion and Sediment Controls Workshop and Vendor Exhibit* – MassHighway will sponsor and conduct a workshop and vendor exhibit of erosion and sediment controls for state agency personnel, contractors and municipalities. Over the course of the General Permit term, a forum is needed to disseminate new information on regulations, common field problems, enforcement issues, and new technologies for site controls. MassHighway will provide this forum to insure that this information will reach the target audience – construction contractors. In addition, this will also serve as a means for small businesses and new ventures in the erosion control arena to market their products and technologies to the Contractors who ultimately determine the means and methods for performing the construction work.

7. *Erosion and Sediment Control Field Tests* – MassHighway will perform field tests of new erosion and sediment control materials on MassHighway projects. A memo summarizing materials effectiveness and whether it is recommended for use at additional sites will be prepared upon completion of each field test and internally circulated.

8. *Annual Construction Bulletins* - MassHighway will begin a program to issue annual construction bulletins to each District regarding storm water issues. These bulletins will include information pertinent to the NPDES program and storm water management, such as new or updated regulations or policies, erosion prevention and sediment control research, and water quality BMPs. These bulletins will be used to disseminate information from the other programs discussed in this minimum control measure to the appropriate parties within MassHighway.

3.5 Post-Construction Runoff Control

EPA Minimum Control Requirement: According to the general permit, "the permittee must develop, implement and enforce a program to address storm water runoff from new development and redevelopment projects that disturb greater than one acre and discharge into the MS4. The program must include projects less than one acre if the project is part of a larger common plan of development."

At a minimum, the program must include:

(a.) To the extent allowable under state law, a regulatory mechanism to address post construction runoff from new development and redevelopment. If such a mechanism does not exist, development and adoption of a mechanism must be part of the program. If attempts to enforce this provision of the program are ineffective, the permittee may seek assistance from EPA or the state agency in enforcing this provision.

(b.) Procedures to ensure adequate long term operation and maintenance of best management practices.

(c.) Procedures to ensure that any controls that are in place will prevent or minimize impacts to water quality.

(d.) The Massachusetts Highway Department may use the approved Storm Water Management Handbook as a tool to implement this provision.

Current MassHighway Programs: MassHighway does not generally accept storm water from adjacent properties in the fashion that municipal MS4s accept drainage from properties within the municipality. Construction within MassHighway property is subject to the following programs addressing post-construction runoff control:

A. *MassHighway Department Highway Design Manual* -- Drainage systems for MassHighway operated roadways are designed to standards derived from the

MHD Highway Design Manual, Chapter 10: Drainage and Erosion Control (which is periodically updated). The design of a particular drainage system is almost entirely dependent upon physical site conditions and cost.

B. *MassHighway Storm Water Handbook* – MassHighway has recently completed an extensive effort in preparing a Storm Water Handbook for roadway designers, public works personnel, and other persons involved in the design, permitting, review, and implementation of highway and bridge improvement projects in the Commonwealth of Massachusetts. The objective of this Handbook is to provide guidance in the development of cost-effective storm water management strategies for highway projects to comply with the DEP Stormwater Management Policy. The Handbook focuses on the unique constraints of existing roadways. It provides guidance for storm water management practices readily and reasonably applicable to highway improvement projects and new construction. In order to comply with NPDES Phase II requirements. MassHighway has expanded the use of the Handbook within the Department to include all urbanized areas regulated under the NPDES general permit. This change extends compliance with the Storm Water Policy to projects within urbanized areas, in addition to those subject to the Wetlands Protection Act. The Handbook was released in 2002. MassHighway requires that all new construction or redevelopment activities undertaken by others that are funded in whole or in part by MassHighway comply with the Handbook.

C. *Roadway Maintenance* – MassHighway implements roadway maintenance programs on a statewide basis. Highway maintenance programs have typically included:

- Maintenance of road surfaces (repaving/pot hole repair);
- Correction of drainage problems;
- Correction of safety problems;
- Repair or replacement of failed or malfunctioning drainage outlets;
- Catch basin cleaning; and
- Street sweeping.

D. *Southeast Expressway BMP Effectiveness Project* - MassHighway has recently completed a study aimed at determining the effectiveness of water quality inlets (WQIs) and catch basins in removing suspended particulate matter in highway runoff. Two types of structural BMPs, a deep-sumped hooded catch basin and three 1500-gallon offline water quality inlets were investigated, to assess their effectiveness in reducing highway contaminant concentrations along the Southeast Expressway in Boston, Massachusetts. The temporal and spatial variability in

suspended sediment transport through each structural BMP was characterized using automatic monitoring techniques. The effectiveness of each BMP in reducing suspended sediment loads was assessed using a mass balance approach.

The results of the study indicated:

- More than half of the suspended sediment in highway runoff is material less than 0.062 mm in diameter (sand silt/break).
- An average of 74 percent of the sediment particles retained in the WQIs were greater than 0.062 mm in diameter.
- An average of 92 percent of the sediment particles retained in the catch basins were greater than 0.062 mm in diameter.
- The 14-month sediment–removal efficiency was 35 percent for one WQI and 28 percent for the second WQI.
- The sediment–removal efficiency for individual storms during the 14-month monitoring period for the deep-sumped hooded catch basin was 39 percent.
- In the combined-treatment system, where catch basins provided primary suspended-sediment treatment, the WQIs reduced the mass of the suspended sediment from the pavement by about an additional 18 percent (beyond the catch basins 39 percent).
- Sweepers were successful in removing particles larger than 0.5 mm in diameter. Because the highway lacks curbing that would provide a physical boundary to trap debris and sediment, and the equipment was inefficient in trapping particles less than 0.062 mm in diameter, pavement sweeping provided few water-quality benefits for the Southeast Expressway. Moreover, the roadway edge was made up of unconsolidated soil – vulnerable to being dislodged by the sweeper's brush and subsequently eroded onto the pavement.
- The capture efficiency of suspended sediment was further reduced by resuspension of fine-grained sediments within the WQIs, as well as from high flows bypassing the WQIs.
- Floatable debris was not indefinitely retained within the offline water quality inlets.
- The primary factor for controlling suspended sediment removal efficiency was residence time.
- The average relative percent difference (RPD) between concentrations of trace metals in storm water samples from the inlets and the outlets of the water quality inlets ranged from 15 to 30 percent.

- The average RPD for concentrations of organic constituents was commonly less than about 10 percent and negative in several cases.
- The separators did not affect the concentrations of dissolved solids as they passed through the chambers.

E. *Technology Acceptance and Reciprocity Partnership (TARP)* - TARP is a program developed to help states analyze the many innovative environmental technologies available in the marketplace today. The performance of new technologies has the potential to contribute to state environmental protection efforts, but few if any standardized methods have been established to guide the collection and evaluation of technology performance. To address this problem, a consortium of six states created TARP. The theory behind the program is to provide uniform methods for collecting and evaluating data on technology performance and cost, so that states can share scientifically credible, reliable data which enhance their ability to make scientifically sound and defensible decisions.

F. *Stormwater Innovative Technology Evaluators (SITEs) Committee* – The SITEs Committee is sponsored by the Massachusetts Executive Office of Environmental Affairs (EOEA) and includes staff from the Strategic Envirotechnology Partnership (STEP) Program, Massachusetts DEP, MassHighway, Coastal Zone Management (CZM), and EOEA. The function of the SITEs committee is to evaluate innovative BMPs including insuring that the technology vendors or programs followed TARP protocols during performance testing and data collection.

The STEP's role has become an important concern for MassHighway because the STEP "verifications" have the effect of law. Appendix D of the DEP Storm Water Policy Handbook (p.D-1) state that, "if the operating parameters of an alternative technology have been verified by the STEP program, (conservation) commissions SHALL presume the system will function within those parameters."

Although there have been problems with DEP's current method for sanctioning the use of innovative storm water technologies, MassHighway would like to continue its role on the SITES Committee. Given its vast experience in storm water management and drainage design, MassHighway has the appropriate expertise to assist EOEA in evaluating both the effectiveness and the practicability of innovative storm water technologies. A primary goal of this effort should be to develop public policy that leads to discernable improvements to the environment, but that does not require a disproportionate level of (public and private) funding.

Proposed Control Program: MassHighway plans to address this minimum control measure by continuing the current programs discussed above and implementing the following programs during the permit term:

1. *MassHighway Storm Water Handbook* - Secure DEP ratification for MassHighway Storm Water Handbook.

2. *Inventory and Tracking of BMPs in Inventory Database* - The inventory database will include modules for inventorying and tracking of Best Management Practices (e.g., detention ponds, swales, etc). Protocol for inventorying BMPs will be included in the Field Personnel Drainage Inventory Summary Protocol and the Drainage Inventory specification, which will list the information required in the drainage inventory database (discussed in Section 3.3) from future construction and redevelopment projects. This inventory database system will facilitate the tracking, implementation and record keeping of BMPs (i.e., inspection, maintenance, location, and design characteristics).

3. *Highway Runoff Contaminant Model* - Develop a model that will characterize and estimate contaminant loading from highway runoff, as a follow up to the Southeast Expressway project. This model could be used to effectively estimate pollutant loading from highway property. The model will characterize the concentrations of a broad range of contaminants (e.g., nutrients, metals, hydrocarbons, and bacteria) in highway runoff and adequately account for rainfall intensity, antecedent conditions, particle sizes, traffic volume, pavement area and flow. This model could then be used by MassHighway as one of its tools for evaluating impacts in watersheds affected by TMDL studies.

4. *BMP Maintenance Manual*

   (a) Develop BMP Maintenance Manual, to be used as a field guide by Maintenance personnel for developing inspection and maintenance schedules, and during maintenance operations.

   (b) Provide training on the BMP Maintenance Manual for district maintenance personnel and other interested MassHighway personnel.

5. *Right-of-Way Parcel Evaluation* - Develop a program of evaluating parcels, which are candidates for disposal (i.e., sale) by MassHighway, for the potential to locate storm water BMPs on the site. This includes developing a site inspection form to be used during field reconnaissance work by personnel from MassHighway's Right-of-Way Division to aid the Environmental Section in determining the storm water BMP siting potential.

3.6 Pollution Prevention/ Good Housekeeping

EPA Minimum Control Requirement: In recognition of the benefits of pollution prevention practices, the NPDES Phase II permit requires an operator of a regulated transportation MS4 to:

(a.) Develop and implement a program with a goal of preventing and/or reducing pollutant runoff from transportation facility operations. The program must include an employee-training component.

(b.) Include, at a minimum, maintenance activities for the following: rest areas along interstates; weigh stations; material storage yards; new construction and land disturbance; roadway drainage system maintenance, and storm water system maintenance.

(c.) Develop schedules for maintenance activities described in paragraph (b) above.

(d.) Develop inspection procedures and schedules for long term structural controls.

Current MassHighway Programs: In the context of a highway drainage system pollution prevention or good housekeeping measures may include:

- **Source Control:** Implementation of control measures to reduce or eliminate the discharge of pollutants – that is provide source control (e.g., programs that encourage recycling or litter control, minimize vehicle emissions or usage, minimize pesticide use, or improve highway safety).
- **Training:** Training MassHighway personnel regarding proper maintenance procedures and source control.
- **Maintenance:** Maintenance and inspection of structural and non-structural controls to reduce floatables and other pollutants discharging from the drainage system.
- **Waste Disposal:** Development and implementation of procedures for disposal of waste removed from separate storm sewers or structural and non-structural control devices.

Many existing programs and activities undertaken by MassHighway and other transportation agencies address this minimum control requirement. The following is a summary of those programs:

3.6.1 Source Control

Source control measures (e.g., reducing vehicle use, reducing the potential for accidental spills, controlling litter, and minimizing chemical use) are effective at minimizing the accumulation on and washoff of pollutants from the roadway surface. Current programs which provide such controls include:

A. *Project Clean* -- The continued development and expansion of Project Clean, a beautification program designed to ensure cleanliness along state highways and at rest areas. Under Project Clean, motorists and transit riders serve as a monitoring force to help identify problem areas.

B. *Adopt-a-Highway* – A nationwide program whereby organizations and business adopt a stretch of highway, and participate in litter control and other enhancement projects. The program provides an opportunity for environmentally conscious groups and corporations to participate in keeping Massachusetts roads litter-free. In recognition of the volunteer efforts, MassHighway installs a sign recognizing the adopting group for their contribution toward keeping Massachusetts clean.

C. *Deicing Programs and Reduced Salt Areas* – MassHighway has addressed environmental issues related to deicing programs through the Generic Environmental Impact Report (GEIR) for deicing practices. Salt and sanding operations are completed in accordance with procedures approved in the GEIR. Specific recommendations include: optimize the management of road sand for snow and ice control operations by using sand only where it is most effective, such as intersections, low volume roads, and steep grades, and by pre-wetting sand so that smaller amounts can be applied to achieve maximum effectiveness. In addition, the DEP Snow Removal Policy provides additional guidance for winter maintenance practices, including a recommendation to avoid Zone II well protection areas for the stockpiling of snow.

The state of the art in snow and ice removal is anti-icing, or the prevention of the bond of snow and ice to the pavement. The preferred method of anti-icing is the use of liquids prior to or at the beginning of a storm. MassHighway utilizes liquid calcium chloride (LCC) as an anti-icier. This process can save thousands of tons of salt per year. MassHighway has also reduced the amount of sand applied to state roadways by more than 50% over the last 2 years. All of MassHighway's salt is stored under cover.

Chemical spreaders are equipped with ground speed control and are required to be calibrated at the start of each season and are randomly checked during the season to make certain the spreader is dispensing the correct amount of material.

MassHighway maintains over 1,700 lane miles of "Reduced Salt Areas" in an effort to protect water supplies and other environmentally sensitive areas adjacent to state roadways.

D. *Highway Emergency Locator Program (HELP)* - As many people know all too well, roadway breakdowns are not only a headache, but oftentimes hazardous. Fortunately, MassHighway has a solution to HELP people who break down on the side of the road - send a HELP Van or Tow Truck. MassHighway has 22 HELP vans and tow trucks statewide to patrol the roads during the peak hours and offer assistance to people with car trouble. MassHighway can HELP with everything from a flat tire, to an empty gas tank, to minor repairs.

E. *Vegetation Management* –MassHighway is in the process of developing a generic Vegetation Management Plan (VMP) which outlines methods of minimizing the discharge of pollutants related to the storage and application of pesticides, herbicides, and fertilizers, applied by the permittee's employees or contractors, to MassHighway right-of-ways. The generic vegetation management plan will incorporate the principles of Integrated Pest Management.

F. *Mass Transit/Car Pooling* -- The MassHighway HOV Program promotes ridesharing through a variety of activities, including two HOV lanes, 34 park-and-ride lots and Caravan for Commuters, Inc., and a statewide ride-sharing program that connects commuters to an array of bus, vanpool and carpool support services.

G. *Alternative Transportation* -- MassHighway supports the use of alternative (non-motorized) transportation, including pedestrian and bicyclists, through technical assistance and funding support of bike path projects at the local level.

H. *Highway Safety* – Accident prevention is the single most effective control measure available to minimize accidental spills to the highway drainage system. Existing programs that address highway safety include:

Safety Design Standards – MassHighway incorporates safety measures into its highway design. Examples include, design requirements for guardrail when slope and vertical drop criteria are met, standards for adequate siting distances at intersections, and acceleration and deceleration lanes at entrances and exits, measures to sustain pavement integrity, and effective roadway drainage.

Hazard Signage/Information – As part of its design practices, signage is provided to warn of tipping hazards on interchanges, steep grades, or other vehicle hazards to reduce the occurrence of accidents.

Electronic Variable Message Signs (VMS) – MassHighway has installed Variable Message Signs (VMS) on selected roadways to improve driver awareness regarding road conditions ahead.

Rumble Strips – MassHighway is currently implementing a policy to include driver alert rumble strips as part of future highway design projects and major improvement projects.

I. *Toxics Use Reduction (TURA)* – MassHighway has created a Pollution Prevention Task Force (PPTF) as part of the Environmental Management System Implementation Plan to reduce risk and improve the overall environmental quality at department facilities through toxins use reduction. The PPTF evaluates the materials (e.g., coolants, hydraulic oils, additives, solvents) used at maintenance facilities to determine if it is practicably feasible to replace toxic chemicals with non-toxic alternatives.

3.6.2 Training

MassHighway conducts a significant amount of training for its staff through a series of programs.

A. *MassHighway Training Assistance Program (MTAP) and Baystate Roads Program* - MassHighway funds training programs through the MassHighway Training Assistance Program (MTAP) and Baystate Roads program. These programs provide training to MassHighway and Municipal DPW staff and include workshops and seminars addressing storm water management, wetland protection, hazardous waste, and related issues. MassHighway has recently provided training on the MassHighway Stormwater Handbook through the MTAP program.

B. *Facility Handbook Training* – Annual training is provided to MassHighway maintenance facility personnel regarding good housekeeping practices and spill prevention.

C. *Snow and Ice Program Training* – Training is provided to MassHighway supervisors and drivers annually internally and through Bay State Roads (MTAP) programs on the latest techniques, equipment and material available for snow and ice removal.

D. *Equipment and Vehicle Safety Training* – MassHighway personnel are trained on the proper use of equipment and vehicles to minimize the potential for spills and accidents.

3.6.3 Maintenance

A. *Storm Water System* – MassHighway's current maintenance and inspection program for the storm water system includes the inspection and maintenance of catch basins, as well as pavement sweeping. According to the MassHighway Stormwater Handbook, MassHighway recommends the following practices for the routine operation and maintenance of roadway drainage systems and BMPs including rest areas and maintenance storage yards:

- Maintain records that document catch basin inspection and cleaning (as well as any maintenance activities for other drainage structures), including executed contracts, certificates of completion, contractor invoices, or other types of maintenance logs;
- Sweep roadways on an annual basis after winter deicing applications;
- Note problems and take appropriate corrective actions to maintain outlets and BMPs in good working condition;
- Take appropriate control measures to avoid discharge of materials to receiving wetland and water resources during cleaning and maintenance activities (e.g., avoid side-casting sediments from ditch cleaning into adjacent wetlands);
- Install, inspect and maintain construction BMPs to ensure appropriate sediment control is provided throughout construction and until the site is stabilized.

Through MassHighway's maintenance privatization program, outside contractors complete much of the highway maintenance, though in-house personnel complete some work. Local DPW departments are responsible for some of drainage structures and BMPs associated with MassHighway roadways. These structures and BMPs will be inspected and maintained in compliance with the individual municipality's Storm Water Management Plans. It should be noted that, in most cases, the state highways do not receive excessive amounts of leaf litter or lawn clippings, which could necessitate more frequent cleaning of catch basins.

When MassHighway constructs new or redevelopment projects, Standard 9 of the DEP Stormwater Management Policy requires the storm water management system to have an operation and maintenance plan to ensure that the system functions as designed. The plan identifies the system owner, the parties responsible for operation and maintenance, a schedule for inspection and maintenance, and the maintenance tasks to be undertaken.

B. *Maintenance/ Material Storage Yards* – MassHighway has recently completed a review of each of its 139-maintenance/ material storage yards. A Facility Handbook was created for each facility and provides the information needed to maintain environmental compliance at the maintenance facilities in accordance with MassHighway's Environmental Management System (EMS). The handbook is used as a reference guide and contains useful information such as Standard Operating Procedures (SOPs) and environmental policies. The review also included development of facility layout plans.

3.6.4 Waste Disposal

MassHighway properly disposes of waste materials removed from drainage structures and storm water BMPs during maintenance. Based on the results of street sweepings tests, the Massachusetts Department of Environmental Protection (DEP) has established a policy allowing for the disposal of street sweeping on the vegetated right-of-way. Materials removed from catch basins are currently disposed of according to the "Reuse and Disposal of Contaminated Soil at Massachusetts Landfills" DEP Policy #COMM-97-001.

Proposed Programs: MassHighway plans to comply with this minimum control measure by continuing the current programs discussed above and implementing the following programs during the permit term:

1. *Good Housekeeping/ Pollution Prevention Program Evaluation* - MassHighway will evaluate the existing programs described above to determine whether additional or revised activities to increase effectiveness and usefulness of the programs. MassHighway will evaluate each program during the beginning of the year and determine what actions, if any, could be taken to make the programs more effective and useful in regards to storm water and good housekeeping measures. The following schedule will be followed:

   - Year 1: Training Programs (MTAP, Baystate Roads, Facility Handbook, Snow and Ice Program, and Equipment and Vehicle Safety);
   - Year 2: Source Control Programs – litter and chemical use reduction (Project Clean, Adopt-a-Highway, Deicing and Reduced Salt Areas, VMP, Toxics Use Reduction);
   - Year 3: Source Control Programs – vehicle use reduction and accident prevention (MassTransit, Alternative Transportation, Highway Safety);
   - Year 4: Maintenance Programs; and
   - Year 5: Waste Disposal.

2. *Catch Basin Inspection and Maintenance Record System*

   (a) Initially, MassHighway will collect data on the accumulation of debris (including the frequency of cleaning catch basins and any drainage problems) for representative areas, and determine if the current inspection and cleaning schedule should be altered for particular areas.

   (b) The schedule will target areas that are in greatest need of cleaning, with an emphasis on locations with sensitive receiving waters (e.g. public drinking water reservoirs), while corresponding to MassHighway's limited maintenance budgets.

   (c) Upon completion of the review, the Standard Operating Procedure (SOP) for catch basin cleaning will be updated, as necessary.

   (d) The revised schedule will be implemented within each of the five districts.

   (e) Once the storm sewer system maps and databases are created for specific areas (as part of the Drainage Inventory), future catch basin cleaning information (e.g. inspection and cleaning dates) will be added to the inventory database.

4.0 ADDITIONAL REQUIREMENTS

4.1 General

Parts I, V and IX of the General Permit include additional requirements beyond the minimum control measures discussed in Section 3.0. MassHighway will comply with many of the additional requirements by continuing the use of the Storm Water Handbook and implementing the Environmental Site Data Form and Instructions (part of the Construction SWPPP Template) and drainage inventory program. Each of these programs is discussed below:

1. *MassHighway Storm Water Handbook* - MassHighway has recently completed a Storm Water Handbook for roadway designers, public works personnel, and other persons involved in the design, permitting, review, and implementation of highway and bridge improvement projects in the Commonwealth of Massachusetts. The objective of this Handbook is to provide guidance in the development of cost-effective storm water management strategies for highway projects to comply with the DEP Stormwater Management Policy and NPDES Phase II. The Handbook focuses on the unique constraints of existing roadways. It provides guidance for storm water management practices readily and reasonably applicable to highway improvement projects and new construction. In order to comply with NPDES Phase II requirements, MassHighway has expanded the use of the Handbook within the Department to include urbanized areas regulated under the NPDES general permit. This change extends compliance with the Stormwater Policy to projects within urbanized areas, in addition to those subject to the Wetlands Protection Act.

2. *Environmental Site Data Form* – In order to streamline the preparation of Construction SWPPPs on MassHighway projects, MassHighway will prepare a site specific data form which the project designer will complete regarding project and site information. This template will include requirements from the NPDES General Permit for MS4s and will be submitted by the designer once 25% Design is complete. By including information required for both the Construction and MS4 permit, MassHighway will be minimizing the duplication of effort to comply with these two regulations. The data form will include review of the project for:

   - potential adverse effects to state or federally listed endangered species habitat;
   - potential adverse effects to historic properties;
   - discharge(s) to water quality impaired waters;

- discharge(s) to waterbodies with approved Total Maximum Daily Load (TMDL);
- discharge(s) to coastal waters with public swimming beaches;
- discharge(s) to basins designated as "high" or "medium" in the most recent Massachusetts Water Resource Commission's *Stressed Basins in Massachusetts* report;
- discharge(s) to public drinking water sources and their protection areas (Class A and B surface waters used for drinking water and well head protection areas);
- discharge(s) to Class A waters, Zone 1 wellhead protection areas, and the sanitary radius to supply wells;
- discharge(s) to Outstanding Resource Waters (as designated in 314 CMR 4.00);
- discharge(s) to shell fishing areas (open versus closed areas); and
- discharge(s) to cold water fishery segments as identified in 314 CMR 4.00.

In order to provide the designer with further guidance when completing the Environmental Site Data Form, MassHighway will create a set of instructions to guide the designer to the regulations, which must be met if priority areas are identified on the checklist.

3. *Drainage Inventory* - Drainage inventories of the discharges within urbanized areas will include review of discharges for potential impacts to the resources listed above. The outcome of these reviews will be summarized in each year's annual report and maintained in the drainage inventory database. The drainage inventory will include:
   - review of discharges for compliance with the additional requirements,
   - documenting the outcome of any agency or internal review, and
   - including this information in the inventory database.

The following sections describe in greater detail each of the additional requirements and how MassHighway will comply with the requirements during the permit term.

4.2 Endangered Species Act

General Permit Requirement: According to Part I.B.2(a), discharges or discharge related activities can only be covered by this permit if they meet the following requirements:

i. Coverage under this permit is available only if the storm water discharges, allowable non-storm water discharges, and discharge related activities are not likely to jeopardize the continued existence of any species that are listed as endangered or threatened ("listed") under the ESA or result in the adverse modification or destruction of habitat that is designated as critical under the ESA ("critical habitat"). Submission of a signed NOI will be deemed to constitute certification of eligibility.

ii. "Discharge related activities" include: activities which cause, contribute to, or result in storm water point source pollutant discharges; and measures to control storm water discharges, including the siting, construction and operation of best management practices (BMPs) to control, reduce or prevent storm water pollution.

iii. In order to demonstrate eligibility, the permittee must use the most recent Endangered and Threatened Species County-Species List available from EPA. Eligibility must be determined prior to submission of the NOI. The most current list is available at http://www.epa.gov/npdes/. The permittee must meet one or more of the criteria described below for the entire term of the permit. The information used to determine eligibility must be maintained as part of the Storm Water Management Program.

- ♦ Criteria A: No endangered or threatened species or critical habitat are in proximity to the MS4 or the point where authorized discharges reach the receiving waters; or

- ♦ Criteria B: In the course of a separate federal action involving the MS4, formal or informal consultation with the Fish and Wildlife Service (FWS) and/or the National Marine Fisheries Service (NMFS) under Section 7 of the ESA has been concluded and that consultation:

  - Addressed the effects of the MS4 storm water discharges, allowable non-storm water discharges, and discharge related activities on listed species and critical habitat; and

  - The consultation resulted in either a no jeopardy opinion or a written concurrence by FWS and/or NMFS on a finding that the storm water

discharges, allowable non-storm water discharges, and discharge related activities are not likely to adversely affect listed species or critical habitat; or

- Criteria C: The activities are authorized under Section 10 of the ESA and that authorization addresses the effects of the storm water discharges, allowable non-storm water discharges, and discharge related activities on listed species and critical habitat; or

- Criteria D: Using best judgment and knowledge, the effects of the storm water discharges, allowable non-storm water discharges, and discharge related activities on listed species and critical habitat have been evaluated. Based on those evaluations, a determination is made by the permittee that there is no reason to believe that the storm water discharges, allowable non-storm water discharges, and discharge related activities will jeopardize the continued existence of any species or result in the adverse modification or destruction of critical habitat; or

- Criteria E: The storm water discharges, allowable non-storm water discharges, and discharge related activities were already addressed in another operator's certification of eligibility which includes the MS4 activities. If certification is under this criterion, the permittee agrees to comply with any measures or controls upon which the other operator's certification was based.

iv. The permitting authority may require any permittee or applicant to provide documentation of the determination of eligibility for this permit where the EPA or the FWS and/or NMFS determines that there is a potential impact on listed species or critical habitat.

v. A discharge is not authorized if the discharge or discharge related activities cause a prohibited "take" of endangered or threatened species (as defined under Section 3 of the ESA and 50 CFR 17.3), unless such actions are authorized under sections 7 or 10 of the ESA.

vi. Discharges are not authorized where the discharge or discharge related activity are likely to jeopardize the continued existence of any species that are listed as endangered or threatened under the ESA or result in the adverse modification or destruction of habitat that is designated as critical under the ESA.

Figure 4-1 illustrates the MassHighway roads that are located within urbanized areas and within areas designated as potential habitat for the shortnose sturgeon or dwarf

wedge mussel (federally listed species). These are the two federal species of concern currently identified during EPA's consultation with Fish and Wildlife Service (FWS) and National Marine Fisheries Service (NMFS).

DEP Requirement: According to Part IX.C.1 of the General Permit, the permittee shall comply with the Massachusetts Endangered Species Act (MESA) (MGL c, 131A and regulations at 321 CMR 10.00) and any actions undertaken to comply with this storm water permit shall not result in non-compliance with MESA.

Existing MassHighway Programs:

A. *Wetland Protection Act Compliance* – Most projects undertaken by MassHighway are subject to the Wetland Protection Act (WPA). As required by the Wetland Protection Regulations under this Act, the MassHighway Environmental Section submits a Notice of Intent for review by the local Conservation Commission and DEP. Part of this submittal includes compliance with the Massachusetts Endangered Species Act (MESA). MassHighway routinely contacts Massachusetts Natural Heritage Program (NHP) and US Fish and Wildlife to review the projects if they are in the vicinity of endangered species habitat in order to assess whether the project could potentially impact federal or state endangered species habitat. If a potential impact is identified, MassHighway works with the agencies to design the project to minimize the impacts.

B. *401 Water Quality Certification* – Certain bridge projects are exempt from the Wetland Protection Act but are subject to the state 401 Water Quality Certification. As part of this certification application, MassHighway must review compliance with MESA. The projects are reviewed with Massachusetts Natural Heritage Program (NHP) and US Fish and Wildlife if endangered species habitat is mapped in the vicinity of the project. If the agencies identify a potential impact, MassHighway works with the agencies to modify the project design to minimize the impacts.

C. *Categorical Exclusion (CE) Checklist* – Designers of MassHighway projects that include federal funds must complete this checklist (under the National Environmental Policy Act) at 25% Design. The checklist includes determining if the site is in an area where there are federally listed endangered species or critical habitat. If the site is within such an area, it does not qualify for a Programmatic Categorical Exclusion and an Individual Categorical Exclusion is required by the Federal Highway Administration (FHWA).

NOTE:
Map Produced from Massachusetts Highway Department Roads datalayer from the MassGIS website. Plan only shows roadway designated as owned by MassHighway.
The Urbanized Area boundary provided by US EPA Region One.
Priority sites for rare species layer is from MassGIS. NHESP 1999-2001 Priority Habitats for State-Protected Rare Species: This layer is NOT equivalent to 'Significant Habitat' as designated under Massachusetts Endangered Species Act". Habitat identifed for Shortnose sturgeon (Acipenser brevirostrum). Habitat for Dwarf Wedge mussel not shown but located in vicinity of Mill River (Whately/Hatfield/Northamptom) and Fore River (Amherst). Priority sites designation shown are for illustrative purposes only. To determine if discharge is within potential endangered species habitat the discharge must be reviewed in accordance with the MS4 general permit.

Legend

N
W E
S

- Mass Highway Districts
- Urbanized Areas
- Priority Habitat for Rare Species (Shortnose sturgeon)
- Roads Not Within Urbanized Areas
- Roads Within Urbanized Areas

MassHighway Roads within Urbanized Areas and Potential Endangered Species Habitat

NPDES Phase II Permitting
Massachusetts Highway Department
10 Park Plaza, Boston, MA 02116

0 5 10 20 30 40 50 Miles

Scale: 1:850,000 January 2003

MASS HIGHWAY

Figure 4-1

Proposed MassHighway Programs:

1. *Environmental Site Data Form* – In order to streamline the preparation of Construction SWPPPs on MassHighway projects, MassHighway will develop a site specific data form which the project designer will complete regarding project and site information. This template will include requirements from the NPDES General Permit for MS4s and will be submitted by the designer once 25% Design is complete. By including information required for both the Construction and MS4 permit, MassHighway will be minimizing the duplication of effort to comply with these two regulations. The checklist will include review of the project for potential adverse effects to state or federally listed endangered species habitat.

   In order to provide the designer with further guidance when completing the Environmental Site Data Form, MassHighway will develop a set of instructions to guide the designer to the regulations which must be met if "priority areas" are identified on the checklist.

2. *Highway Runoff Contaminant Model* - Develop a model that will characterize and estimate contaminant loading from highway runoff, as a follow up to the Southeast Expressway project. This model could be used to effectively estimate pollutant loading from highway property. The model will characterize the concentrations of a broad range of contaminants (e.g., nutrients, metals, hydrocarbons, and bacteria) in highway runoff and adequately account for rainfall intensity, antecedent conditions, particle sizes, traffic volume, pavement area and flow. This model could then be used by MassHighway as one of its tools for evaluating impacts in watersheds affected by TMDL studies.

3. *Drainage Inventory* - Drainage inventories will include review of discharges within urbanized areas for potential impacts to endangered species habitat. The outcome of these reviews will be summarized in each year's annual report and maintained in the drainage inventory database. The inventory will include:

   - review discharges within urbanized areas for potential impacts to endangered species habitat, and
   - documenting the outcome of the federal and state endangered species review and measures/ design alterations implemented if a potential impact is identified.

Endangered Species Habitat Certification: According to Part 1.B.2.a discharges can only be permitted under this general permit if the MS4 can certify that the discharge does not adversely affect any species that are listed as endangered or threatened under the Endangered Species Act (ESA) or result in the adverse modification of destruction

of habitat that is designated as critical under the ESA. MA DEP has added a provision in Section IX extending this certification to compliance with the MESA. EPA's Response to Comments document for this general permit indicates that this certification (included at the front of this document) "*should be based on the permittee's knowledge at the time of submission of the Notice of Intent (NOI). MS4 operators should make determinations based on current information. As a permittee implements its storm water management program, new information regarding locations of outfalls may become available. As the new information becomes available, the permittee may need to reevaluate the ESA certification criterion to ensure that permit eligibility with regards to ESA is maintained.*" MassHighway is not currently aware of any discharges which are impacting federal or state-listed endangered species habitat. As discussed above, as discharges are identified as part of the drainage inventory they will be reviewed for compliance with the endangered species programs.

4.3 Essential Fish Habitat

General Permit Requirement: According to Part I.B.2(f), discharges whose direct or indirect impacts would jeopardize any Essential Fish Habitat will not be permitted.

MassHighway Program: According to EPA's *Response to Comments* (dated 5/16/03) document, EPA has determined that essential fish habitat is not jeopardized by discharges in Massachusetts. No further action is necessary by MassHighway to comply with this requirement.

4.4 National Register of Historic Places Properties

General Permit Requirement: According to Part I.B.2.(g), discharges, or implementation of a storm water management program, which adversely effects properties listed or eligible to be listed on the National Register of Historic Places will not be authorized by this permit. Discharges may be eligible for coverage under this permit if the permittee is in compliance with requirements of the National Historic Preservation Act and has coordinated any necessary activities to avoid or minimize impacts. These requirements must be coordinated with the State Historic Preservation Officer. Information used to determine eligibility must be maintained as part of the Storm Water Management Program.

Existing MassHighway Programs:

A. <u>*Categorical Exclusion (CE) Checklist*</u> – The project designer on MassHighway projects with federal funds must complete this checklist and submit at 25% Design. The checklist includes reviewing the site for significant impacts to properties protected by Section 4(f) of the DOT act or Section 106 of the National

Historic Preservation Act. In order to qualify for a programmatic Categorical Exclusion the project can not have a determination of adverse effect by the Sate Historic Preservation Officer. If the preservation officer determines that an adverse effect will occur, the designer must complete and Individual CE for approval by the Federal Highway Administration (FHWA).

B. *Cultural Resources Review* – The Cultural Resources Department of the Environmental Section at MassHighway reviews all projects for impacts to historic properties at the 25% Design stage. If a potential impact is found, the Department works with the designer (MassHighway or consultant) and Massachusetts Historical Commission to alter the design to mitigate or prevent adverse effects.

Proposed MassHighway Programs:

1. *Environmental Site Data Form* – In order to streamline the preparation of Construction SWPPPs on MassHighway projects, MassHighway will develop a site specific data form which the project designer will complete regarding project and site information. This template will include requirements from the NPDES General Permit for MS4s and will be submitted by the designer once 25% Design is complete. By including information required for both the Construction and MS4 permit, MassHighway will be minimizing the duplication of effort to comply with these two regulations. The checklist will include review of the project for potential adverse effects to historic properties.

   In order to provide the designer with further guidance when completing the Environmental Site Data Form, MassHighway will develop a set of instructions to guide the designer to the regulations that must be met if potential adverse effects to historic properties are identified on the checklist.

2. *Drainage Inventory* - Drainage inventories of the discharges within urbanized areas will include review of discharges within urbanized areas for potential impacts to the historic properties. The outcome of these reviews will be summarized in each year's annual report. The drainage inventory will include:

   - review of discharges within urbanized areas for potential impacts to historic properties, and
   - documenting the outcome of the historic properties review and measures/ design alterations implemented if a potential impact is identified.

Figure 4-2 illustrates the MassHighway roads within urbanized areas and the historic properties as listed in the MassGIS datalayer. This datalayer is only current through 1997 and the most recent State Register of Historic Places should be consulted when determining if a discharge would potentially impact a historic property.

Historic Properties Certification: According to Part 1.B.2(g) discharges can only be permitted under this general permit if the MS4 can certify that the discharge does not adversely effect any properties listed on the National Register of Historic Places. EPA's Response to Comments document also indicates that this certification (included at the front of this document) "*should submit the NOI based on the best information available at the time of submission. As the program develops new information may become available. As the new information becomes available, the permittee may need to reevaluate the National Historic Preservation Act (NHPA) certification to ensure that permit eligibility with regard to NHPA is maintained.*" MassHighway is not currently aware of any discharges that are impacting places listed or eligible for listing on the National Register of Historic Places. As discussed above, as MassHighway identifies discharges through its proposed drainage inventory program, it will review the discharges for compliance with NHPA, and will implement action as appropriate to maintain permit eligibility with regard to NHPA.

4.5 Discharges to Water Quality Impaired Waters

General Permit Requirement: Part I.C of the permit indicates that if a discharge from the transportation MS4 discharges is within the watershed of a 303(d) listed water body the permit requires that MassHighway evaluate the discharge for a series of additional requirements. Waters listed on the 303d list have been determined by Massachusetts DEP to be impaired based on monitoring data. The DEP is then responsible for creating a "pollution budget" designed to restore the health of the impaired waterbody in accordance with the Federal Clean Water Act. This pollution budget is also referred to as a Total Maximum Daily Load budget (TMDL) and includes identifying the causes (types of pollutant) and source(s) (where the pollutants come from) of the pollutant from direct discharges (point sources) and indirect discharges (non-point sources), determining the maximum amount of the pollutant that can be discharged to a specific water body to meet water quality standards, and developing a plan to meet that goal.

1. The permittee must determine whether storm water discharges from any part of the MS4 contribute, either directly or indirectly, to a 303(d) listed water body.

NOTE:
Map Produced from Massachusetts Highway Department Roads datalayer from the MassGIS website. Plan only shows roadway designated as owned by MassHighway.
The Urbanized Area boundary provided by US EPA Region One.
Historic districts layer is from MassGIS. Historic Districts - Massachusetts Historical Commision: This is a beta version and does not reflect listings past 1997. Users should consult the most recent State Register of Historic Places (available at the State House Bookstore) for updates. Listings are regularly updated in the weekly State Register. Historic district designations shown are for illustrative purposes only. To determine if discharge may adversely affect a historic property the discharge must be reviewed in accordance with the MS4 general permit.

Legend

- Mass Highway Districts
- Urbanized Areas
- Historic Districts
- Roads Not Within Urbanized Areas
- Roads Within Urbanized Areas

N W E S

MassHighway Roads within Urbanized Areas and Historic Properties

NPDES Phase II Permitting
Massachusetts Highway Department
10 Park Plaza, Boston, MA 02116

0 5 10 20 30 40 50 Miles

Scale: 1:850,000 January 2003

MASS HIGHWAY

Figure 4-2

2. The storm water management program must include a section describing how the program will control the discharge of the pollutants of concern and ensure that the discharges will not cause an instream exceedance of the water quality standards. This discussion must specifically identify control measures and BMPs that will collectively control the discharge of the pollutant(s) of concern. Pollutant(s) of concern refer to the pollutant identified as causing the impairment.

Current MassHighway Programs:

A. *MA DEP Stormwater Management Policy* -- Most new construction and redevelopment activities undertaken by MassHighway are currently subject to the Massachusetts DEP's Stormwater Management Policy and Performance Standards through the Wetlands Protection Act and Clean Water Act Section 401 Water Quality Certification.

B. *MassHighway Storm Water Handbook* - MassHighway has recently completed a Storm Water Handbook for roadway designers, public works personnel, and other persons involved in the design, permitting, review, and implementation of highway and bridge improvement projects in the Commonwealth of Massachusetts. The objective of this Handbook is to provide guidance in the development of cost-effective storm water management strategies for highway projects to comply with the DEP Stormwater Management Policy and NPDES Phase II. The Handbook focuses on the unique constraints of existing roadways. It provides guidance for storm water management practices readily and reasonably applicable to highway improvement projects and new construction. In order to comply with NPDES Phase II requirements, MassHighway has expanded the use of the Handbook within the Department to include urbanized areas regulated under the NPDES general permit. This change extends compliance with the Stormwater Policy to projects within urbanized areas, in addition to those subject to the Wetlands Protection Act.

   Designs which include BMPs recommended in the Handbook should not require any additional BMPs to meet the requirement to control the discharge of the pollutant(s) of concern to the impaired waterbody.

Proposed MassHighway Programs:

1. *Environmental Site Data Form* – In order to streamline the preparation of Construction SWPPPs on MassHighway projects, MassHighway will develop a site specific data form which the project designer will complete regarding project and site information. This template will include requirements from the NPDES

General Permit for MS4s and will be submitted by the designer once 25% Design is complete. By including information required for both the Construction and MS4 permit, MassHighway will be minimizing the duplication of effort to comply with these two regulations. The checklist will include review of the project for potential discharges to water bodies included on the 303(d) list.

Legend

N
W E
S

- Mass Highway Districts
- Urbanized Areas
- Watersheds
- 303d listed waterbodies (1998)
- Roads Not Within Urbanized Areas
- Roads Within Urbanized Areas

MassHighway Roads within Urbanized Areas which Potentially Discharge to Impaired Waterways

NPDES Phase II Permitting
Massachusetts Highway Department
10 Park Plaza, Boston, MA 02116

0 5 10 20 30 40 50 Miles

Scale: 1:850,000 January 2003

NOTE:
Map Produced from Massachusetts Highway Department Roads datalayer from the MassGIS website. Plan only shows roadway designated as owned by MassHighway. The Urbanized Area boundary provided by US EPA Region One. 303d listed waters obtained from US EPA Watershed Assessment site.

MASS HIGHWAY

Figure 4-3

In order to provide the designer with further guidance when completing the Environmental Site Data Form, MassHighway will develop a set of instructions to guide the designer to the regulations which must be met if the project will potentially have discharges to water bodies on the 303(d) list.

2. *Drainage Inventory* - Drainage inventories of the discharges within urbanized areas will include review of whether the discharges within urbanized areas drain to an impaired waterbody. The outcome of these reviews will be summarized in each year's annual report and maintained in the drainage inventory database. The review will include:

   - identifying whether outfalls (existing or proposed) discharge to a 303(d) listed waterbody,
   - documenting measures included in the design to meet the MA DEP Storm Water Policy, and
   - documenting the outcome of any agency or internal review.

4.6 Discharge to Waterbodies with an Approved TMDL

General Permit Requirement: According to Part I.D of the permit, if a discharge drains to a listed waterbody for which a Total Maximum Daily Load (TMDL) has been developed and approved by EPA, the permittee must comply with the requirements below:

1. Determine whether the approved TMDL is for a pollutant likely to be found in storm water discharges from the MS4.

2. Determine whether the TMDL includes a pollutant waste load allocation (WLA), BMP recommendations or other performance requirements for storm water discharges. This storm water WLA may be expressed in the TMDL as a gross allotment for the impaired water body. Or, provided no specific WLA for the MS4 exists, determine if a Performance Agreement or Memorandum of Understanding has been established between the MS4, EPA, and MA DEP or NH DES which modifies the BMPs or performance standards of the TMDL. Such Memoranda are posted on the TMDL websites. The Massachusetts site is: http://www.state.ma.us/dep/brp/wm/tmdl.html.

3. If the MS4 is required to implement storm water waste load allocation provisions of the TMDL, the permittee must assess whether the WLA is being met through implementation of existing storm water control measures or if additional control measures are necessary. The permittee's assessment of whether the WLA is being met is expected to focus on the

adequacy of the permittee's storm water controls (implementation and maintenance), not on the response of the receiving water.

4. Highlight in the storm water management program and annual reports all control measures currently being implemented or planned to be implemented to control pollutants of concern identified in approved TMDLs. Also include a schedule of implementation for all planned controls. Document the assessment which demonstrates that the WLA will be met including any calculations, maintenance log books, or other appropriate controls.

Current MassHighway Programs:

1. *MA DEP Stormwater Management Policy* -- Most new construction and redevelopment activities undertaken by MassHighway are currently subject to the Massachusetts DEP's Stormwater Management Policy and Performance Standards through the Wetlands Protection Act and Clean Water Act Section 401 Water Quality Certification.

2. *MassHighway Storm Water Handbook* - MassHighway has recently completed a Storm Water Handbook for roadway designers, public works personnel, and other persons involved in the design, permitting, review, and implementation of highway and bridge improvement projects in the Commonwealth of Massachusetts. The objective of this Handbook is to provide guidance in the development of cost-effective storm water management strategies for highway projects to comply with the DEP Stormwater Management Policy and NPDES Phase II. The Handbook focuses on the unique constraints of existing roadways. It provides guidance for storm water management practices readily and reasonably applicable to highway improvement projects and new construction. In order to comply with NPDES Phase II requirements, MassHighway has expanded the use of the Handbook within the Department to include urbanized areas regulated under the NPDES general permit. This change extends compliance with the Stormwater Policy to projects within urbanized areas, in addition to those subject to the Wetlands Protection Act.

   MassHighway feels that by extending the DEP Policy requirements to all projects within urbanized areas, no additional BMPs will be necessary to meet the TMDL requirements if a Waste Load Allocation (WLA) is not included.

Proposed MassHighway Programs:

1. *Highway Runoff Contaminant Model* – As discussed in Minimum Control Measure 5, MassHighway will develop a model that will characterize and estimate contaminant loading from highway runoff, as a follow-up to the Southeast Expressway project. By accounting for rainfall intensity, antecedent conditions, particle sizes, traffic volume, pavement area and flow, and characterizing the concentrations of a broad range of contaminants (e.g., nutrients, metals, hydrocarbons, and bacteria) in highway runoff, the model will be used to generate scientifically-defensible estimates of pollutant loading from highway property. These estimates could then be used to support selecting appropriate storm water BMPs, with an emphasis on source control measures.

2. *TMDL Recommendation Summary Table* – Table 4-1 summarizes the Final TMDLs where the waterbody may include discharges from MassHighway roads. The table summarizes recommendations included in the reports which pertain to MassHighway, reviews the recommendation and summarizes existing compliance programs and/ or plans to implement such programs. This table will be updated to include new TMDLs and progress on implementation of any related measurable goals in each annual report.

3. *Environmental Site Data Form* – In order to streamline the preparation of Construction SWPPPs on MassHighway projects, MassHighway will develop a site specific data form which the project designer will complete regarding project and site information. This template will include requirements from the NPDES General Permit for MS4s and will be submitted by the designer once 25% Design is complete. By including information required for both the Construction and MS4 permit, MassHighway will be minimizing the duplication of effort to comply with these two regulations. The checklist will include designating whether the project is within the watershed of a waterbody with a final TMDL. By highlighting the location within a TMDL watershed, the consultant or MassHighway designer will be aware of the need to review conditions within the TMDL report as part of the project design.

   In order to provide the designer with further guidance when completing the Environmental Site Data Form, MassHighway will develop a set of instructions to guide the designer to the regulations which must be met if potential discharges to water bodies with an approved TMDL are identified on the checklist.

4. *Drainage Inventory* - Drainage inventories of discharges within urbanized areas will include review of whether the discharges within urbanized areas drain to a waterbody with an approved TMDL. The outcome of these reviews will be summarized in each year's annual report and maintained in the drainage inventory

database. The drainage inventory will include review of discharges within urbanized areas to:

- identify discharges which drain to a water body with an approved TMDL,
- determine if the TMDL includes a Waste Load Allocation (WLA),

TABLE 4-1: Summary of MA TMDL Reports and Recommendations Which Pertain to MassHighway

Table 4-1: SUMMARY OF MA TMDL REPORTS AND RECOMMENDATIONS WHICH PERTAIN TO MASSHIGHWAY						
Overall Basin	**Specific Waterbodies**	**Pollutant of Concern**	**Does TMDL include a WLA?**	**Does the TMDL include BMP recommendations or performance requirement regarding MassHighway?**	**If yes, what are the recommendations?**	**How is MassHighway currently meeting these recommendations or how does MassHighway plan to meet them in the future?**
Assabet River	Assabet River	Phosphorus	Yes	No	--	--
Bare Hill Pond	Bare Hill Pond	Phosphorus	Yes	No	--	--
Cape Cod	Frost Fish Creek	Bacteria	Yes	Yes	The Massachusetts Highway Department should determine the Route 28 roadway drainage area discharging to Frost Fish Creek and install best management structures and/or operational practices to the maximum extent practicable and, at a minimum, must be designed to meet the water quality standard for bacteria in SA waters. Given this is a waterway with an approved TMDL, the MHD must meet the requirements of EPA's NPDES General Permit for Stormwater Discharges from Small MS4s (Phase II), Part I D(1-4), as it pertains to approved TMDLs.	As part of the next Route 28 reconstruction project, the Massachusetts Highway Department will work with the Town to mitigate the Route 28 roadway drainage in the immediate area by installing practicable best management structures, or operational practices, as warranted by the magnitude of contaminant loading to Frost Fish Creek.

TABLE 4-1: Summary of MA TMDL Reports and Recommendations Which Pertain to MassHighway

Table 4-1: SUMMARY OF MA TMDL REPORTS AND RECOMMENDATIONS WHICH PERTAIN TO MASSHIGHWAY						
Overall Basin	**Specific Waterbodies**	**Pollutant of Concern**	**Does TMDL include a WLA?**	**Does the TMDL include BMP recommendations or performance requirement regarding MassHighway?**	**If yes, what are the recommendations?**	**How is MassHighway currently meeting these recommendations or how does MassHighway plan to meet them in the future?**
Cape Cod	Muddy Creek	Bacteria	Yes	Yes	The Massachusetts Highway Department should determine the Route 28 roadway drainage area discharging to Muddy Creek and install best management structures and/or operational practices to the maximum extent practicable. At a minimum, drainage must be improved to meet the water quality standard for bacteria in SA waters. Given this is a waterway with an approved TMDL, the MHD must meet the requirements of EPA's NPDES General Permit for Stormwater Discharges from Small MS4s (Phase II), Part I D(1-4), as it pertains to approved TMDLs.	As part of the next Route 28 reconstruction project, the Massachusetts Highway Department will determine the Route 28 roadway drainage area discharging to Muddy Creek and install practicable best management structures, or operational practices, as warranted by the magnitude of contaminant loading to Muddy Creek.
Chatham - Stage Harbor	Oyster Pond	Total Nitrogen	Yes	No	--	--
	Oyster Pond River					
	Stage Harbor					
	Mill Pond					
Chatham - Sulphur Springs	Harding Beach Pond					
	Bucks Creek					
Chatham - Taylors Pond	Taylors Pond					
Chatham - Bassing Harbor	Crows Pond					
	Ryder Cove					
	Frost Fish Creek					
Chatham - Muddy Creek	Muddy Creek					
Chicopee Basin	Browning Pond, Oakham	Phosphorus	Yes	No	--	--
	Long Pond, Springfield					
	Sugden Reservoir, Spencer					
	Mona Lake, Springfield					

TABLE 4-1: Summary of MA TMDL Reports and Recommendations Which Pertain to MassHighway

Table 4-1: SUMMARY OF MA TMDL REPORTS AND RECOMMENDATIONS WHICH PERTAIN TO MASSHIGHWAY						
Overall Basin	**Specific Waterbodies**	**Pollutant of Concern**	**Does TMDL include a WLA?**	**Does the TMDL include BMP recommendations or performance requirement regarding MassHighway?**	**If yes, what are the recommendations?**	**How is MassHighway currently meeting these recommendations or how does MassHighway plan to meet them in the future?**
	Minechoag Pond, Ludlow Spectacle Pond, Wilbraham Wickaboag Pond, West Brookfield	Phosphorus	Yes	Yes	TMDL suggests MassHighway and MassTurnpike should regulate road sanding, salting, regular sweeping, and installation of BMPs.	MassHighway regulates road sanding and salting through its Snow and Ice Program and the procedures approved in the GEIR. Roads are swept on an annual basis after winter deicing applications. MassHighway will review projects within this watershed for opportunities to include additional BMPs within proposed projects if MassHighway determines they will help address the pollutant loading issue. MassHighway believes that the most cost-effective approach to improving stormwater quality is to focus on source control measures, rather than end-of-pipe BMPs. Two important examples include reducing winter road sand application rates, and stabilizing shoulder areas that erode onto road surfaces. Source reduction measures are described in this NPDES Stormwater Management Plan.
Connecticut Basin	Aldrich Lake East, Granby Aldrich Lake West, Granby Leverett Pond, Leverett Lake Wyola, Shutesbury	Phosphorus	Yes	No	--	--
Connecticut Basin (cont'd)	Loon Pond, Springfield Lake Warner, Hadley	Phosphorus	Yes	Yes	TMDL suggests MassHighway, MassTurnpike, and towns should develop storm water management plans for Phase II NPDES and initiate additional BMPs in critical areas. MassHighway and MassTurnpike should regulate road sanding, salting, regular sweeping, and installation of BMPs.	MassHighway has completed their Storm Water Management Plan (SWMP) for compliance with NPDES Phase II. MassHighway regulates road sanding and salting through its Snow and Ice Program and the procedures approved in the GEIR. Roads are swept on an annual basis after winter deicing applications. MassHighway will review projects within this watershed for opportunities to include additional BMPs within proposed projects if MassHighway determines they will help address the pollutant loading issue. MassHighway believes that the most cost-effective approach to improving stormwater quality is to focus on source control measures, rather than end-of-pipe BMPs. Two important examples include reducing winter road sand application rates, and stabilizing shoulder areas that erode onto road surfaces. Source reduction measures are described in this NPDES Stormwater Management Plan.
French Basin	Buffumville Lake,	Phosphorus	Yes	Yes	TMDL suggests:	

TABLE 4-1: Summary of MA TMDL Reports and Recommendations Which Pertain to MassHighway

Table 4-1: SUMMARY OF MA TMDL REPORTS AND RECOMMENDATIONS WHICH PERTAIN TO MASSHIGHWAY						
Overall Basin	**Specific Waterbodies**	**Pollutant of Concern**	**Does TMDL include a WLA?**	**Does the TMDL include BMP recommendations or performance requirement regarding MassHighway?**	**If yes, what are the recommendations?**	**How is MassHighway currently meeting these recommendations or how does MassHighway plan to meet them in the future?**
	Dutton Pond, Leicester Greenville Pond, Lowes Pond, Oxford McKinstry Pond, Oxford Pierpoint Meadow Pond, Pikes Pond, Charlton Rochdale Pond, Leicester Texas Pond, Oxford				1. MassHighway conduct loading study and develop methodology to calculate loadings from highways.	USGS is currently performing a loading study for MassHighway. The loading study is scheduled to be completed by the end of the permit term (2008).
					2. MassHighway, MassPike, and local towns should initiate twice yearly sweeping and catch basin inspection and cleaning program along MassHighway I-395, MassPike I-90 and other roadways.	MassHighway has proposed a catchbasin inspection and maintenance record system in its SWMP (BMP 6F). MassHighway has very limited maintenance budgets and staff, therefore we feel that the cost-effectiveness, and necessity of cleaning catch basins twice per year should be closely evaluated rather than arbitrarily set. Consequently, MH has included the following program: 1 Collect data for representative areas. Determine if the current inspection and cleaning schedule should be altered for particular areas. 2 Upon completion of the review, update Catch Basin Cleaning SOP, if necessary. 3. Implement SOP. 4 Once drainage inventory is created for an area, add future catch basin cleaning information.
					3. MS4s should install additional BMPs as needed to address pollutant loadings identified above.	MassHighway will review projects within this watershed for opportunities to include additional BMPs within proposed projects if MassHighway determines they will help address the pollutant loading issue. MassHighway believes that the most cost-effective approach to improving stormwater quality is to focus on source control measures, rather than end-of-pipe BMPs. Two important examples include reducing winter road sand application rates, and stabilizing shoulder areas that erode onto road surfaces. Source reduction measures are described in this NPDES Stormwater Management Plan.
French Basin (cont'd)		Phosphorus	Yes	Yes	4. MassHighway, MassPike and the towns of Charlton, Leicester and Oxford should prepare storm water management plans for Phase II.	MassHighway has completed their Storm Water Management Plans (SWMP) for compliance with NPDES Phase II.

TABLE 4-1: Summary of MA TMDL Reports and Recommendations Which Pertain to MassHighway

Table 4-1: SUMMARY OF MA TMDL REPORTS AND RECOMMENDATIONS WHICH PERTAIN TO MASSHIGHWAY						
Overall Basin	**Specific Waterbodies**	**Pollutant of Concern**	**Does TMDL include a WLA?**	**Does the TMDL include BMP recommendations or performance requirement regarding MassHighway?**	**If yes, what are the recommendations?**	**How is MassHighway currently meeting these recommendations or how does MassHighway plan to meet them in the future?**
					5. MassHighway and MassTurnpike should regulate road sanding, salting, regular sweeping, and installation of BMPs.	MassHighway regulates road sanding and salting through its Snow and Ice Program and the procedures approved in the GEIR. Roads are swept on an annual basis after winter deicing applications. MassHighway will review projects within this watershed for opportunities to include additional BMPs within proposed projects if MassHighway determines they will help address the pollutant loading issue. MassHighway believes that the most cost-effective approach to improving stormwater quality is to focus on source control measures, rather than end-of-pipe BMPs. Two important examples include reducing winter road sand application rates, and stabilizing shoulder areas that erode onto road surfaces. Source reduction measures are described in this NPDES Stormwater Management Plan.
	Cedar Meadow Pond, Leicester	Phosphorus	Yes	No	--	--
	Dresser Hill Pond, Charlton					
	Gore Pond, Charlton/Dudley					
	Granite Reservoir, Charlton					
	Hudson Pond, Oxford					
	Jones Pond, Charlton/Spencer					
	Larner Pond, Dudley					
	New Pond, Dudley					
	Peter Pond, Dudley					
	Robinson Pond, Oxford					
	Shepherd Pond, Dudley					
	Mosquito (Tobins) Pond, Dudley					
French Basin (cont'd)	Wallis Pond, Dudley	Phosphorus	Yes	No		

TABLE 4-1: Summary of MA TMDL Reports and Recommendations Which Pertain to MassHighway

Table 4-1: SUMMARY OF MA TMDL REPORTS AND RECOMMENDATIONS WHICH PERTAIN TO MASSHIGHWAY						
Overall Basin	**Specific Waterbodies**	**Pollutant of Concern**	**Does TMDL include a WLA?**	**Does the TMDL include BMP recommendations or performance requirement regarding MassHighway?**	**If yes, what are the recommendations?**	**How is MassHighway currently meeting these recommendations or how does MassHighway plan to meet them in the future?**
Indian Lake	Indian Lake, Worcester	Phosphorus	Yes	Yes	TMDL suggests that MassHighway and town or city Dept. Public Works should reduce impervious surfaces, institute increased street sweeping and catch basin cleaning; install detention basins, etc.	MassHighway will review projects within this watershed for opportunities to include additional BMPs within proposed projects if MassHighway determines they will help address the pollutant loading issue. MassHighway believes that the most cost-effective approach to improving stormwater quality is to focus on source control measures, rather than end-of-pipe BMPs. Two important examples include reducing winter road sand application rates, and stabilizing shoulder areas that erode onto road surfaces. Source reduction measures are described in this NPDES Stormwater Management Plan.
Lake Boon (Boons Pond)	Lake Boon, Hudson/ Stow	Phosphorus	Yes	No	--	--
Lake Quinsigamond and Flint Pond	Flint Pond, Grafton/Worcester/ Shrewsbury Lake Quinsigamond, Worcester/ Shrewsbury	Phosphorus	Yes	Yes	TMDL suggests that MassHighway should develop methodology to calculate loadings from highways and conduct pilot projects to assess loadings and test BMPs on highways.	USGS is currently performing a loading study for MassHighway. The loading study is scheduled to be completed by the end of the permit term (2008).
Leesville Pond	Leesville Pond, Auburn/ Worcester	Phosphorus	Yes	Yes	TMDL suggests that:	
					1. MassHighway should conduct loading study and develop methodology to calculate loadings from highways.	USGS is currently performing a loading study for MassHighway. The loading study is scheduled to be completed by the end of the permit term.
					2. MassHighway, MassPike, and towns of Auburn, Leicester, Paxton, and Millbury and City of Worcester should initiate twice yearly sweeping and catch basin inspection and cleaning program along I-290 and other roadways and install additional BMPs as needed to address pollutants loadings identified above.	MassHighway regulates road sanding and salting through its Snow and Ice Program and the procedures approved in the GEIR. Roads are swept on an annual basis after winter deicing applications.
						MassHighway has proposed a catchbasin inspection and maintenance record system in its SWMP (BMP 6F). MassHighway has very limited maintenance budgets and staff, therefore we feel that the cost-effectiveness, and necessity of cleaning catch basins twice per year should be closely evaluated rather than arbitrarily set. Consequently, MH has included the following program:

TABLE 4-1: Summary of MA TMDL Reports and Recommendations Which Pertain to MassHighway

Table 4-1: SUMMARY OF MA TMDL REPORTS AND RECOMMENDATIONS WHICH PERTAIN TO MASSHIGHWAY						
Overall Basin	**Specific Waterbodies**	**Pollutant of Concern**	**Does TMDL include a WLA?**	**Does the TMDL include BMP recommendations or performance requirement regarding MassHighway?**	**If yes, what are the recommendations?**	**How is MassHighway currently meeting these recommendations or how does MassHighway plan to meet them in the future?**
Leesville Pond (cont'd)		Phosphorus	Yes	Yes		1. Collect data for representative areas. Determine if the current inspection and cleaning schedule should be altered for particular areas.
						2. Upon completion of the review, update Catch Basin Cleaning SOP, if necessary.
						3. Implement SOP.
						4. Once drainage inventory is created for an area, add future catch basin cleaning information.
					3. MassHighway, MassPike and towns of Auburn, Leicester, Paxton, and Millbury should prepare storm water management plan for Phase II.	MassHighway will review projects within this watershed for opportunities to include additional BMPs within proposed projects if MassHighway determines they will help address the pollutant loading issue. MassHighway believes that the most cost-effective approach to improving stormwater quality is to focus on source control measures, rather than end-of-pipe BMPs. Two important examples include reducing winter road sand application rates, and stabilizing shoulder areas that erode onto road surfaces. Source reduction measures are described in this NPDES Stormwater Management Plan.
					4. MassHighway, MassPike, and town or city Dept of Public Works should reduce impervious surfaces, institute street sweeping program, catch basin cleaning, install detention basin etc.	see above measures
Little Harbor	Little Harbor, Cohassett	Fecal Coliform	No	--	--	
Miller River Basin	Bents Pond	Phosphorus	Yes	Yes	TMDL suggests that MassHighway and MassTurnpike should better manage road sanding, salting, regular sweeping, and installation of BMPs.	MassHighway has proposed a catchbasin inspection and maintenance record system in its SWMP (BMP 6F). MassHighway has very limited maintenance budgets and staff, therefore we feel that the cost-effectiveness, and necessity of cleaning catch basins twice per year should be closely evaluated rather than arbitrarily set. Consequently, MH has included the following program:

TABLE 4-1: Summary of MA TMDL Reports and Recommendations Which Pertain to MassHighway

Table 4-1: SUMMARY OF MA TMDL REPORTS AND RECOMMENDATIONS WHICH PERTAIN TO MASSHIGHWAY						
Overall Basin	**Specific Waterbodies**	**Pollutant of Concern**	**Does TMDL include a WLA?**	**Does the TMDL include BMP recommendations or performance requirement regarding MassHighway?**	**If yes, what are the recommendations?**	**How is MassHighway currently meeting these recommendations or how does MassHighway plan to meet them in the future?**
	Bourn-Hadley Pond					1. Collect data for representative areas. Determine if the current inspection and cleaning schedule should be altered for particular areas.
Miller River Basin (cont'd)	Brazell Pond					2. Upon completion of the review, update Catch Basin Cleaning SOP, if necessary.
	Lake Ellis					3. Implement SOP.
	Greenwood Pond					4. Once drainage inventory is created for an area, add future catch basin cleaning information.
	Lake Monomonac					MassHighway will review projects within this watershed for opportunities to include additional BMPs within proposed projects if MassHighway determines they will help address the pollutant loading issue. MassHighway believes that the most cost-effective approach to improving stormwater quality is to focus on source control measures, rather than end-of-pipe BMPs. Two important examples include reducing winter road sand application rates, and stabilizing shoulder areas that erode onto road surfaces. Source reduction measures are described in this NPDES Stormwater Management Plan.
	Ramsdall Pond					
	Reservoir No. 1					
	Wallace Pond					
	Whitney Pond					
Miller River Basin (cont'd)	Beaver Flowage Pond	Phosphorus	Yes	No	--	--
	Cowee Pond					
	Davenport Pond					
	Lake Denison					
	Depot Pond					
	Hilchey Pond					
	Lower Naukeag Lake					
	Minott Pond South					
	Minott Pond					
	Parker Pond					
	Reservoir No. 2					
	Riceville Pond					
	South Athol Pond					
	Stoddard Pond					
	Ward Pond					
	Whites Mill Pond					
	Wrights Reservoir					
Neponset River Basin		Bacteria	No	N/A	--	--

TABLE 4-1: Summary of MA TMDL Reports and Recommendations Which Pertain to MassHighway

Table 4-1: SUMMARY OF MA TMDL REPORTS AND RECOMMENDATIONS WHICH PERTAIN TO MASSHIGHWAY						
Overall Basin	**Specific Waterbodies**	**Pollutant of Concern**	**Does TMDL include a WLA?**	**Does the TMDL include BMP recommendations or performance requirement regarding MassHighway?**	**If yes, what are the recommendations?**	**How is MassHighway currently meeting these recommendations or how does MassHighway plan to meet them in the future?**
Northern Blackstone	Auburn Pond, Auburn	Phosphorus	Yes	Yes	TMDL suggests that MassHighway and MassTurnpike should regulate road sanding, salting, regular sweeping, and installation of BMPs.	MassHighway regulates road sanding and salting through its Snow and Ice Program and the procedures approved in the GEIR. Roads are swept on an annual basis after winter deicing applications. MassHighway will review projects within this watershed for opportunities to include additional BMPs within proposed projects if MassHighway determines they will help address the pollutant loading issue. MassHighway believes that the most cost-effective approach to improving stormwater quality is to focus on source control measures, rather than end-of-pipe BMPs. Two important examples include reducing winter road sand application rates, and stabilizing shoulder areas that erode onto road surfaces. Source reduction measures are described in this NPDES Stormwater Management Plan.
	Curtis Pond North, Worcester					
	Curtis Pond South, Worcester					
	Dorothy Pond, Millbury					
	Eddy Pond, Auburn					
	Pondville Pond, Auburn					
	Smiths Pond, Leicester					
	Southwick Pond, Leicester					
	Stoneville Pond, Auburn					
Northern Blackstone (cont'd)	Brierly Pond, Millbury	Phosphorus	Yes	No	--	--
	Green Hill Pond, Worcester					
	Howe Reservoir, Millbury					
	Jordan Pond, Shrewsbury					
	Mill Pond, Shrewsbury					
	Newton Pond, Shrewsbury					
	Shirley Street Pond, Shrewsbury					
Palmer River	Palmer River from the Route 6 bridge in Rehoboth to the State Line	Fecal Coliform	Yes	No	--	--
	Palmer River from the confluence of the East and West Branches of the Palmer River to the Shad Factory Pond dam					

TABLE 4-1: Summary of MA TMDL Reports and Recommendations Which Pertain to MassHighway

Table 4-1: SUMMARY OF MA TMDL REPORTS AND RECOMMENDATIONS WHICH PERTAIN TO MASSHIGHWAY						
Overall Basin	**Specific Waterbodies**	**Pollutant of Concern**	**Does TMDL include a WLA?**	**Does the TMDL include BMP recommendations or performance requirement regarding MassHighway?**	**If yes, what are the recommendations?**	**How is MassHighway currently meeting these recommendations or how does MassHighway plan to meet them in the future?**
	Palmer River from the Shad Factory Pond dam to Route 6 bridge					
Salisbury Pond	Salisbury Pond, Worcester	Phosphorus	Yes	Yes	TMDL indicates that:	
					1. MassHighway should develop methodology to calculate loadings from highways and conduct pilot projects to assess loadings and test BMPs on highways.	USGS is currently performing a loading study for MassHighway. The loading study is scheduled to be completed by the end of the permit term.
					2. MassHighway and town or city Dept. Public Works should reduce impervious surfaces, institute more frequent street sweeping and catch basin cleaning, install detention basins, dredge and maintain storm water detention basins, etc.	MassHighway has committed to DEP in its January 23, 2002 letter that streets will be swept at least once a year (usually in spring) and more often if necessary. All sumped drainage structure will be inspected and cleaned, if necessary, twice a year and more often if necessary. MassHighway will inspect/ clean drainage outlet locations where sediment build-up is evident. MassHighway will inspect and repair damaged and/ or clogged drainage conveyances.
Shawsheen River Basin	Shawsheen River	Bacteria	Yes	No	--	
		Stormwater	Yes	No	--	

- document any BMP recommendations or performance requirements included in TMDL which impact MassHighway discharges,
- if TMDL includes a WLA, determine whether it is being met through implementation of existing storm water control measures,
- if WLA is not being met currently, document proposed plan for meeting WLA, and
- document the outcome of any agency or internal review.

4.7 Part V - Additional Resources

Part V of the General Permit includes three requirements that will be addressed by MassHighway current or proposed programs outlined in this section.

4.7.1 Discharges to Coastal Waters with Public Swimming Beaches

Part V.A.8 of the permit indicates that MS4s which discharge to coastal waters with public swimming beaches should consider these waters a priority in implementation of the storm water management program.

4.7.2 Groundwater Recharge and Infiltration

In accordance with Part V.A.9 of the permit, the permittee should consider opportunities for groundwater recharge and infiltration in the implementation of the minimum control measures described in Section 3 of this report. The permittee must evaluate physical conditions, site design, and best management practices to promote groundwater recharge and infiltration where feasible in the implementation of the control measures described above. During the implementation of the storm water management program, the permittee must address recharge and infiltration for the minimum control measures as well as any reasons for electing not to implement recharge and infiltration. Loss of annual recharge to groundwater should be minimized through the use of infiltration measures to the maximum extent practicable.

Permittees in areas identified as "high" or "medium" in the most recent Massachusetts Water Resources Commission's *Stressed Basins in Massachusetts* report in effect at the time the permittee submits a Notice of Intent and accompanying storm water management program, must minimize the loss of annual recharge to groundwater from new development and redevelopment, including but not limited to drainage

improvements done in conjunction with road improvements, street drain improvement projects and flood mitigation projects, consistent with Standard 3 of the Storm Water Management Policy in areas both within and outside of the jurisdiction of the Massachusetts' Wetlands Protection Act.

4.7.3 Public Drinking Water Supplies

According to Part V.C of the permit,

1. MS4s which discharge to public drinking water sources and their protection areas (Class A and B surface waters used for drinking water and well head protection areas) should consider these waters a priority in implementation of the storm water management program.
2. Discharges to public drinking water supply sources and their protection areas (wellhead protection areas, Class A and Class B waters) should provide pretreatment and spill control capabilities to the extent practicable.
3. Discharges to Class A waters, Zone 1 wellhead protection areas, and the sanitary radius to supply wells should be avoided to the extent feasible.

4.7.4 Current MassHighway Programs:

A. *MA DEP Stormwater Management Policy* -- Most new construction and redevelopment activities undertaken by MassHighway are currently subject to the Massachusetts DEP's Stormwater Management Policy and Performance Standards through the Wetlands Protection Act and Clean Water Act Section 401 Water Quality Certification.

- Standard 3 of the Policy requires that the permittee meet certain requirements to minimize the loss of recharge to groundwater from a site.
- Standard 6 of the Policy provides additional protection for critical areas including ORWs (which include surface drinking water supplies) and public swimming beaches.

B. *MassHighway Storm Water Handbook* - MassHighway has recently completed a Storm Water Handbook for roadway designers, public works personnel, and other persons involved in the design, permitting, review, and implementation of highway and bridge improvement projects in the Commonwealth of Massachusetts. The objective of this Handbook is to provide guidance in the development of cost-effective storm water management strategies for highway projects to comply with the DEP Stormwater Management Policy and NPDES Phase II. The Handbook

focuses on the unique constraints of existing roadways. It provides guidance for storm water management practices readily and reasonably applicable to highway improvement projects and new construction. In order to comply with NPDES Phase II requirements, MassHighway has expanded the use of the Handbook within the Department to include urbanized areas regulated under the NPDES general permit. This change extends compliance with the Stormwater Policy to projects within urbanized areas, in addition to those subject to the Wetlands Protection Act.

By meeting the nine standards of the Policy, including Standard 3 which discusses recharge criteria, MassHighway will comply with the recharge provisions of Section V.B.9 of the General Permit.

C. *Environmental Site Data Form* – In order to streamline the preparation of Construction SWPPPs on MassHighway projects, MassHighway will develop a site specific data form which the project designer will complete regarding project and site information. This template will include requirements from the NPDES General Permit for MS4s and will be submitted by the designer once 25% Design is complete. By including information required for both the Construction and MS4 permit, MassHighway will be minimizing the duplication of effort to comply with these two regulations. The checklist will include designating whether the project includes discharges to:

- public swimming beaches;
- a "medium" or "high" stressed basin; (By highlighting the location of the project, partially or completely, within such a basin early on in the process, the consultant or MassHighway designer will be aware of the need to meet the recharge criteria.); and
- public drinking water sources and their protection areas (Class A and B surface waters used for drinking water, Zone I and II well head protection areas and the sanitary radius to private water supply wells).

In order to provide the designer with further guidance when completing the Environmental Site Data Form, MassHighway will develop a set of instructions to guide the designer to the regulations which must be met if the project will potentially have discharges to any of the resources listed above.

4.7.5 Proposed MassHighway Programs:

1. *Drainage Inventory* - Drainage inventories of discharges within urbanized areas will include review of whether discharges within urbanized areas drain

to any of the above resources. The outcome of these reviews will be summarized in each year's annual report and maintained in the drainage inventory database. The drainage inventory will include:

- review of whether outfalls (existing or proposed) discharge to a:
  - coastal water with public swimming beaches,
  - basin with a "medium" or "high" stressed classification and if the discharge is within such a basin what measures were taken to comply with Standard 3 of the MA DEP Stormwater Policy,
  - public surface drinking water sources and their protection areas (Class A and B surface waters used for drinking water);
  - public drinking water well sources and their protection areas (Zone 1 and II wellhead protection areas), and/or
  - the sanitary radius to private water supply wells;
- documenting the outcome of any agency or internal review;
- including this information in the inventory database.

Table 4-2 lists the MWRA Stressed Basin Classifications.

Table 4-2 : MWRA Stressed Basins Classifications*

Station #	Station Name	Final Stress Level
01102500	Aberjona at Winchester	HIGH
01174500	East Br. Swift nr. Hardwick	HIGH
01165000	East Branch Tully River nr. Athol	HIGH
01174000	Hop Brook nr. New Salem	HIGH
01187300	Hubbard River near West Hartland CT	HIGH
01101500	Ipswich at S. Middleton	HIGH
01102000	Ipswich River at Ipswich	HIGH
01097300	Nashoba Brook nr. Acton	HIGH
01101000	Parker River at Byfield	HIGH
01162500	Priest Brook nr. Winchendon	HIGH
01110000	Quinsigmond River at N. Grafton	HIGH
01109070	Segreganset River nr. Dighton	HIGH
01175670	Seven Mile River nr. Spencer, MA	HIGH

Station #	Station Name	Final Stress Level
01187400	Valley Brook near West Hartland CT	HIGH
01108500	Wading River at Mansfield	HIGH
01172500	Ware River nr. Barre	HIGH
01097000	Assabet at Maynard	MEDIUM
01174900	Cadwell Creek nr. Belchertown	MEDIUM
01103500	Charles River at Dover	MEDIUM
01104500	Charles River at Waltham	MEDIUM
01104200	Charles River at Wellesley	MEDIUM
01099500	Concord below R. Meadow at Lowell	MEDIUM
01124350	French River at Hodges Village	MEDIUM
01333000	Green River at Williamstown	MEDIUM
01170100	Green River nr. Colrain	MEDIUM
01105730	Indian Head River at Hanover	MEDIUM
01124500	Little River nr. Oxford	MEDIUM
01171500	Mill River at Northampton	MEDIUM
01166500	Millers River at Erving	MEDIUM
01164000	Millers River at South Royalston	MEDIUM
01162000	Millers River nr. Winchendon	MEDIUM
01096500	Nashua at E. Pepperell	MEDIUM
01105000	Neponset River at Norwood	MEDIUM
01169000	North River at Shattuckville	MEDIUM
01105600	Old Swamp River nr. S. Weymouth	MEDIUM
01176000	Quaboag nr. West Brimfield	MEDIUM
01124000	Quinebaug River at Quinebaug CT	MEDIUM
01123600	Quinebaug River nr Southbridge	MEDIUM
01100600	Shawsheen River nr. Wilmington	MEDIUM
01169900	South River nr. Conway	MEDIUM
01096000	Squannacook nr. West Groton	MEDIUM
01175500	Swift River at West Ware	MEDIUM
01161500	Tarbell Brook nr. Winchendon	MEDIUM
01108000	Taunton River nr. Bridgewater	MEDIUM
01109060	Threemile River at North Dighton	MEDIUM
01185500	W. Br. Farmington nr New Boston	MEDIUM
01181000	W. Br. Westfield at Huntington	MEDIUM
01109000	Wading River nr. Norton	MEDIUM

Station #	Station Name	Final Stress Level
01173500	Ware River at Gibbs Crossing	MEDIUM
01173000	Ware River at Intake Works nr. Barre	MEDIUM
01111200	West River nr. Uxbridge	MEDIUM
01179500	Westfield River at Knightville	MEDIUM
01112500	Blackstone at Woonsocket	LOW
01177000	Chicopee River at Indian Orchard	LOW
01170500	Connecticut River at Montague	LOW
01184000	Connecticut River at Thompsanville CT	LOW
01168500	Deerfield River at Charlemont	LOW
01170000	Deerfield River nr. West Deerfield	LOW
01197000	E. Br. Housatonic River at Coltsville	LOW
01105500	East Br. Neponset River at Canton	LOW
01171300	Fort River nr. Amherst	LOW
01125000	French River at Webster	LOW
01332500	Hoosic River nr Williamstown	LOW
01331500	Hoosic River nr. Adams	LOW
01197500	Housatonic River at Falls Village CT	LOW
01199000	Housatonic River nr. Great Barrington	LOW
01100000	Merrimack River below Concord R. at Lowell	LOW
01183500	Westfield River nr. Westfield	LOW
01094500	North Nashua nr. Leominster	MEDIUM**
01163200	Otter River at Otter River	MEDIUM**

* Data for the Otter River and the North Nashua River watersheds indicate a low stress classification, however they are classified as Medium stress due to a medium stress classification down gradient.

** Table 6 of MWRA's *Stressed Basins in Massachusetts* report approved December 13, 2001

4.8 Part IX - Resource Areas Required for Priority Consideration

MA DEP Requirement: According to Part IX – 401 Water Quality Certification Requirements Section D of the permit, the permittee shall identify discharges to the following resource areas as a priority and indicate in their storm water management programs how storm water controls will be implemented. Identified priority areas include:

(a.) public water supplies,

(b.) public swimming beaches,

(c.) Outstanding Resource Waters (as designated in 314 CMR 4.00),

(d.) shell fishing areas (open versus closed areas)

(e.) rivers, ponds, lakes and coastal waters which area on the Department 303d list of impaired waters, and

(f.) cold water fishery river segments as identified in 314 CMR 4.00.

Existing MassHighway Programs:

A. *MassHighway Storm Water Handbook* - MassHighway has recently completed a Storm Water Handbook for roadway designers, public works personnel, and other persons involved in the design, permitting, review, and implementation of highway and bridge improvement projects in the Commonwealth of Massachusetts. The objective of this Handbook is to provide guidance in the development of cost-effective storm water management strategies for highway projects to comply with the DEP Stormwater Management Policy and NPDES Phase II. The Handbook focuses on the unique constraints of existing roadways. It provides guidance for storm water management practices readily and reasonably applicable to highway improvement projects and new construction. In order to comply with NPDES Phase II requirements, MassHighway has expanded the use of the Handbook within the Department to include urbanized areas regulated under the NPDES general permit. This change extends compliance with the Stormwater Policy to projects within urbanized areas, in addition to those subject to the Wetlands Protection Act.

The Policy identifies the following as critical areas subject to stricter standards (Standard 6):

- recharge areas for public water supplies including Zone A (400 feet from a surface water reservoir) and 100 feet from its tributaries, and Zone II and Interim Wellhead Protection Areas for groundwater supplies;
- public swimming beaches;
- Outstanding Resource Water (ORWs);

- shellfish growing areas; and
- cold water fisheries.

Proposed MassHighway Programs:

1. *Environmental Site Data Form* – In order to streamline the preparation of Construction SWPPPs on MassHighway projects, MassHighway will develop a site specific data form which the project designer will complete regarding project and site information. This template will include requirements from the NPDES General Permit for MS4s and will be submitted by the designer once 25% Design is complete. By including information required for both the Construction and MS4 permit, MassHighway will be minimizing the duplication of effort to comply with these two regulations. The checklist will include designating whether the project includes discharges to:

   - public water supplies,
   - public swimming beaches,
   - Outstanding Resource Waters (as designated in 314 CMR 4.00),
   - shell fishing areas (open versus closed areas)
   - rivers, ponds, lakes and coastal waters which area on the Department 303d list of impaired waters, and
   - cold water fishery river segments as identified in 314 CMR 4.00.

   In order to provide the designer with further guidance when completing the Environmental Site Data Form, MassHighway will develop a set of instructions to guide the designer to the regulations that must be met if the project will potentially have discharges to any of the resources listed above.

2. *Drainage Inventory* – Drainage inventories of discharges within urbanized areas will include review for discharges within urbanized areas that potentially impact any of the resource areas indicated above. The outcome of these reviews will be summarized in each year's annual report and maintained in the drainage inventory database. The drainage inventory will include:

   - identifying discharges which drain to a resource area listed above,
   - documenting the outcome of any agency or internal review, and
   - including this information in the inventory database.

4.9 Other MA DEP Directives

Part IX.E of the permit allows MA DEP to require the permittee to perform the following additional requirements upon written notice if they feel it is necessary during the permit term:

(a.) Perform water quality monitoring if the monitoring is necessary for the protection of public health or the environment as designated under the authority at 314 CMR 3.00.

(b.) Provide measurable goals verification of the effectiveness of BMPs and other control measures in the permittee's management program, including water quality monitoring.

5.0 EVALUATION AND ASSESSMENT

This section describes procedures for evaluation and assessment of plan implementation and effectiveness against the identified measurable goals, as well as reporting and record retention requirements.

5.1 Plan Evaluation

The Pollution Prevention Team will evaluate program compliance with the required minimum control standards, the appropriateness of our identified best management practices, and progress towards achieving our identified measurable goals on an on-going basis as part of implementation of programs and during preparation of the annual report.

5.2 Plan Updates

If upon evaluation, improved, additional or different controls are deemed necessary to meet the required standards or provide a more effective program, MassHighway will update the storm water management program plan and submit revisions to the EPA and DEP. The submission will meet the following permit requirements:

(a.) Changes adding (but not subtracting or replacing) components, controls or requirements to the SWMP may be made at any time upon written notification to EPA and MADEP.

(b.) Changes replacing an ineffective or unfeasible BMP specifically identified in the SWMP with an alternative BMP may be requested in writing to EPA and MA DEP at any time. Unless denied, changes proposed in accordance with the criteria below shall be deemed approved and may be implemented 60 days from submittal of the request. If the request is denied, EPA or MA DEP, as applicable, will send a written explanation of the denial.

(c.) Modification requests, must include the following information:

- an analysis of why the BMP is ineffective or infeasible (including cost prohibitive),
- expectations on the effectiveness of the replacement BMP, and
- an analysis of why the replacement BMP is expected to achieve the goals of the BMP to be replaced.

Change requests or notifications will be in writing and signed in accordance with the signatory requirements of the permit.

The permit allows EPA or MADEP to require changes to the SWMP as needed to:

(a.) Address impacts on receiving water quality caused or contributed to by discharges from the MS4;

(b.) Include more stringent requirements necessary to comply with a new Federal statutory or regulatory requirement; or

(c.) Include such other conditions deemed necessary to comply with the goals and requirements of the CWA.

According to the permit, any changes requested by EPA or MADEP will be in writing and will set forth the time schedule for the permittee to develop the changes and offer the opportunity to propose alternative program changes to meet the objective of the requested modification.

5.3 Record Keeping

Records required by the NPDES Phase II permit and related to the implementation of this Storm Water Management Plan will be maintained at Ten Park Plaza, Boston, MA. The records will include information used in the development of the storm water management program, any monitoring, copies of reports and all data used in the development of the notice of intent. MassHighway will retain these records for at least five (5) years. MassHighway will make such records accessible to the public at reasonable times during regular business hours. A reasonable fee may be charged for copying requests. MassHighway will not submit records to the EPA or DEP unless specifically requested to do so, except as summarized in the annual reports.

5.4 Annual Reports

Annual reports will be prepared and submitted to Region 1 EPA and MA DEP. In accordance with the general permit, the report will include:

- A self assessment review of compliance with the permit conditions;
- An assessment of the appropriateness of the BMPs included in the current plan;
- An assessment of the progress towards achieving the selected measurable goals for each minimum control measure;
- A summary of results of any information collected and analyzed (including any type of data);
- A summary of the storm water activities planned for the next reporting cycle;

- A discussion of any changes in identified Best Management Practices or measurable goals for each minimum control measure; and
- Notice of reliance on another governmental entity to satisfy some of the permit obligations (if applicable).

The initial annual report shall be submitted by April 18, 2004 and annually thereafter. The annual report shall summarize the activities of the previous calendar year. The reports shall be submitted to the following addresses:

United States Environmental Protection Agency
Water Technical Unit
P.O. Box 8127
Boston, MA 02114

Department of Environmental Protection
Division of Watershed Management
627 Main Street
Worcester, MA 01608

6.0 STORM WATER MANAGEMENT PLAN SUMMARY

This section provides a matrix of the current and proposed programs MassHighway will use to meet each of the six minimum control measures. The matrix also indicates the MassHighway Section/ Division(s) responsible for implementing the program and a schedule for implementation.

TABLE 6-1: STORM WATER MANAGEMENT PLAN SUMMARY MATRIX

BMP ID #	BMP	MEASURABLE GOALS	RESPONSIBLE DEPARTMENT	Permit Year One				Permit Year Two				Permit Year Three				Permit Year Four				Permit Year Five				Next Permit
				Spring 03	Summer 03	Fall 03	Winter 03-04	Spring 04	Summer 04	Fall 04	Winter 04-05	Spring 05	Summer 05	Fall 05	Winter 05-06	Spring 06	Summer 06	Fall 06	Winter 06-07	Spring 07	Summer 07	Fall 07	Winter 07-08	
Minimum Control #1: Public Education and Outreach																								
1A	MTAP	Continue MTAP Program	MTAP																					
1B	Baystate Roads	Continue Baystate Roads Program	Baystate Roads																					
1C-1	MassHighway Website	Add Environmental Division web page to MassHighway web site.	IT/Environmental																					
1C-2		Solicit public input and publicize storm water related initiatives using web page.	IT/Environmental																					
1C-3		Evaluate web page annually and revise as necessary.	IT/Environmental								X				X				X				X	
1D-1	Storm Water Training Workshop	Conduct storm water training workshop for MassHighway personnel.	Environmental/ MTAP								X								X					
1D-2		Conduct storm water training workshop for municipal DPW personnel.	Environmental/ Baystate Roads								X								X					
1E	Construction Industries Article	Prepare and submit article re: Phase II requirements and MassHighway compliance procedures.	Construction Division																					
1F	MassHighway/ Municipal Tie-In Review Process	Develop communication mechanism re: MassHighway drainage that discharges to a local MS4. Develop review process for addressing those concerns. Notify other MS4s of process.	Environmental/ Districts																					
	Programs which are listed under other minimum control measures also include public education aspects (e.g. BMP# 4H, 4L, 4M and 4N)																							
Minimum Control #2: Public Participation and Involvement																								
2A	Project Related Public Notification and Public Participation Requirements	Continue compliance with federal and state public notification and public participation requirements including but not limited to Wetlands Protection Act, Clean Water Act 401 Water Quality Certification, Army Corps of Engineers 404 Permit, and MEPA/NEPA.	Environmental																					
2B	Adopt-a-Highway	Continue to support program.	Adopt-a-Highway																					
2C	Project Clean	Continue to support Project Clean.	Project Clean																					
2D-1	MassHighway Web Site	Post Storm Water Management Plan to web site.	IT/Environmental																					
2D-2		Post annual reports to the web site.	IT/Environmental					X				X				X				X				
Minimum Control #3: Illicit Discharge Detection and Elimination																								
3A	Rest Area Leases	Develop electronic drainage requirements language for incorporation in Rest Area lease agreements where rest area is being redeveloped.	Environmental/ Right-of-Way																					
3B-1	Drainage Inventory	Develop and implement specification for securing drainage information from future construction and redevelopment projects.	Environmental/ Construction/ Planning/ IT Division																					
3B-2	Drainage Inventory	Map drainage discharges within urbanized areas.	Environmental/ IT / Districts																					
3C-1	Illicit Connection Prohibition Policy	Submit Illicit Drainage Connection Policy to Chief Engineer and Commissioner for issuance to Department.	Environmental																					
3C-2	Drainage Tie-In SOP	Prepare an internal draft of a revised Drainage Tie-In SOP. Submit to Chief Engineer.	Environmental																					
3D	Illicit Connection Review	Review twenty discharges each permit year for potential illicit connections.	Environmental/ Districts																					

TABLE 6-1: STORM WATER MANAGEMENT PLAN SUMMARY MATRIX

BMP ID #	BMP	MEASURABLE GOALS	RESPONSIBLE DEPARTMENT	Permit Year One				Permit Year Two				Permit Year Three				Permit Year Four				Permit Year Five				Next Permit
				Spring 03	Summer 03	Fall 03	Winter 03-04	Spring 04	Summer 04	Fall 04	Winter 04-05	Spring 05	Summer 05	Fall 05	Winter 05-06	Spring 06	Summer 06	Fall 06	Winter 06-07	Spring 07	Summer 07	Fall 07	Winter 07-08	
Minimum Control Measure #4: Construction Site Runoff Control																								
4A	MassHighway Department Highway Design Manual	Continue to comply with erosion and sediment control requirements indicated in manual.	Environmental/ Construction/ Projects																					
4B	MA DEP Stormwater Management Policy	Continue to meet criteria in Policy for projects subject to Wetlands Protection Act.	Environmental/ Construction/ Projects																					
4C	NPDES Construction General Permit	Comply with general permit requirements.	Construction																					
4D	Other state environmental regulations or policy	MassHighway projects will continue to be designed and constructed in accordance with all applicable state and federal environmental regulations or policy (e.g. Wetlands Protection Act, 404).	Environmental/ Construction/ Projects																					
4E	MassHighway Storm Water Handbook	Design projects in urbanized areas in compliance with Handbook	Environmental/ Construction/ Projects																					
4F	Standard Specification for Highway and Bridges	Continue to include erosion and pollution prevention controls in bridge contracts.	Environmental/ Construction/ Projects																					
4G	MassHighway Research Need Program	Continue support of this consortium. Continue to pursue applicable research projects.	Environmental/ Construction																					
4H	NPDES Phase II Notice	Develop and distribute a Notice from the MassHighway Chief Engineer to all pre-qualified Construction Contractors regarding the NPDES Phase II Construction Requirements.	Construction Division																					
4I	Contract Bid Item and Special Provision for SWPPPs	Prepare a Contract Bid Item and Special Provision for inclusion in construction contracts to be advertised for bid which exceed the one-acre disturbance threshold.	Construction Division/ Contracts																					
4J	Field Guide on Erosion Prevention and Sediment Control	Prepare field guide and issue to Resident Engineers	Construction Division/ Chief Engineer																					
4K	Storm Water Pollution Prevention Plan Template	Prepare a Storm Water Pollution Prevention Plan (SWPPP) template for use by Contractors on MassHighway construction projects. Implement use of the template on all appropriate MassHighway projects. Once contractors begin to use the template, it may be revised if necessary to address input received internally and from agencies. Ultimately the template will be converted into a computer program.	Construction Division/ Districts																					
4L-1	Training	Conduct annual Erosion Prevention and Sediment Control Training for MassHighway Construction Personnel.	Headquarters (sponsor)																					
4L-2	Training	Sponsor and conduct Erosion and Sediment Control Workshop and Vendor Exhibit.	Bay State Roads/ Construction Division												X									
4M	Erosion and Sediment Control Field Tests	Perform field tests of new erosion and sediment control materials on MassHighway projects. Create and distribute memo internally summarizing materials effectiveness and recommended use.	Construction Division/ Districts/ Landscaping																					
4N	Construction Bulletins	Issue annual construction bulletins to each District regarding storm water issues.	Construction Division				X				X				X				X				X	
	Programs which are listed under other minimum control measures also include construction site runoff controls aspects (e.g. BMP 1E)																							

TABLE 6-1: STORM WATER MANAGEMENT PLAN SUMMARY MATRIX

BMP ID #	BMP	MEASURABLE GOALS	RESPONSIBLE DEPARTMENT	Permit Year One				Permit Year Two				Permit Year Three				Permit Year Four				Permit Year Five				Next Permit
				Spring 03	Summer 03	Fall 03	Winter 03-04	Spring 04	Summer 04	Fall 04	Winter 04-05	Spring 05	Summer 05	Fall 05	Winter 05-06	Spring 06	Summer 06	Fall 06	Winter 06-07	Spring 07	Summer 07	Fall 07	Winter 07-08	
Minimum Control Measure #5: Post Construction Runoff Control																								
5A	MassHighway Storm Water Handbook	Secure DEP ratification for MassHighway Storm Water Handbook.	Environmental																					
5B-1	MassHighway Roadway Maintenance Program	Continue to implement MassHighway maintenance program.	Maintenance																					
5B-2		Include Best Management Practices in drainage inventory database submission requirements.	Construction/ Planning Division																					
5C	TARP	Continue to participate in TARP program	TARP																					
5D	SITEs	Continue to participate in Stormwater Innovative Technology Evaluators (SITEs) Committee which evaluates innovative BMPs.	SITEs																					
5E	Highway Runoff Contaminant Model	Develop and calibrate contaminant loading model.	Env. Div. Consultant																					
5F-1	BMP Maintenance Manual	Develop BMP Maintenance Manual to be used as a field guide by Maintenance Personnel.	Environmental/ Maintenance																					
5F-2		Provide training on manual.	Environmental/ Baystate Roads/ MTAP															X						
5G	Right of Way Parcel Evaluation	Develop and implement a program of evaluating parcels which are candidates for disposal by MassHighway for their potential in siting storm water BMPs.	Environmental																					
	Programs which are listed under other minimum control measures also include post-construction site runoff controls aspects (e.g. BMP# 4A and 4E)																							
Minimum Control Measure #6: Pollution Prevention/Good Housekeeping																								
6A-1	Source Control	Continue to support Project Clean.	Project Clean																					
6A-2		Continue to support Adopt-a-Highway program.	Adopt-a-Highway																					
6A-3		Continue to support Deicing and Reduced Salt Areas Programs.	Environmental/ Districts																					
6A-4		Continue to support Highway Emergency Locator Program (HELP).	HELP																					
6A-5		Continue development of Vegetation Management Plan.	Environmental																					
6A-6		Continue to support MassHighway HOV program.	Planning																					
6A-7		Continue to support alternative transportation through technical funding and assistance.	Planning																					
6A-8		Continue to support highway safety through safety design standards, hazard signage and electronic variable message signs, and rumble strips.	Highway Design																					
6A-9		Continue support of Toxics Use Reduction (TURA) program.	Environmental																					
6B-1	Employee Training	Continue to support MTAP and Baystate Roads program.	MTAP/ Baystate Roads																					
6B-2		Continue Facility Handbook Training.	Environmental																					
6B-3		Continue Snow and Ice Program Training.	Highway Operations																					
6B-4		Continue Equipment and Vehicle Safety Training	Highway Operations																					

TABLE 6-1: STORM WATER MANAGEMENT PLAN SUMMARY MATRIX

BMP ID #	BMP	MEASURABLE GOALS	RESPONSIBLE DEPARTMENT	Permit Year One				Permit Year Two				Permit Year Three				Permit Year Four				Permit Year Five				Next Permit
				Spring 03	Summer 03	Fall 03	Winter 03-04	Spring 04	Summer 04	Fall 04	Winter 04-05	Spring 05	Summer 05	Fall 05	Winter 05-06	Spring 06	Summer 06	Fall 06	Winter 06-07	Spring 07	Summer 07	Fall 07	Winter 07-08	
6C-1	Maintenance	Continue maintenance activities for storm water system.	Districts																					
6C-2		Continue maintenance activities and practices discussed in Environmental Facility Handbooks for maintenance/ material storage yards.	Districts																					
6D	Waste Disposal	Continue proper waste disposal practices.	Districts																					
6E	Good Housekeeping/ Pollution Prevention Program Evaluation	Evaluate existing Good Housekeeping/ Pollution Prevention Programs to determine additional or revised activities which would increase effectiveness and usefulness of the programs.	Environmental																					
6F-1	Roadway Catch Basin Inspection and Maintenance Record System	Collect data for three years on the accumulation of debris for representative areas, and determine if the current inspection and cleaning schedule should be altered for particular areas. The schedule will target areas that are in greatest need of cleaning, with an emphasis on locations with sensitive receiving waters, while corresponding to MassHighway's limited maintenance budgets.	Environmental/ Maintenance/ Districts																					
6F-2		Upon completion of the review, update Catch Basin Cleaning SOP, if necessary.	Environmental/ Maintenance/ Districts																					
6F-3		Implement SOP in each of the five districts.	Districts																					
6F-4		Once drainage inventory is created for an area, add future catch basin cleaning information.	Environmental/ Maintenance/ Districts																					
Endangered Species Act																								
7A	Wetland Protection Act Compliance	MassHighway will continue to comply with MESA as required by the Wetland Protection Act.	Environmental																					
7B	401 Water Quality Certification	MassHighway will continue to comply with MA 401 Water Quality Certification which includes review of the project by MA Natural Heritage program and US Fish and Wildlife if endangered species habitat is mapped in the project vicinity.	Environmental																					
7C	CE Checklist	MassHighway projects which include federal funds must complete this checklist at 25% Design stage. The checklist includes determining if the site is in an area where there are federally listed endangered species or critical habitat.	Environmental																					
7D	Environmental Site Data Form	MassHighway will develop this form to review potential impacts of a project to a variety of resource areas as part of compliance with the NPDES Construction and MS4 general permit. This form will includes review of discharges for potential impact to state or federally listed endangered species or critical habitat. The form will includes instructions to the contractor/designer if impacts are identified.	Environmental/ Construction																					
3A	Drainage Inventory Specification for Design Contracts	MassHighway will prepare a specification requiring the submission of electronic drainage system files and information to be included on future construction, redevelopment and design projects. This document will include protocol based on General Permit Addendum A for endangered species impacts.	Environmental/ IT																					
3B	Field Personnel Drainage Inventory Protocol	MassHighway will prepare a protocol for performing drainage inventories of the state drainage system to be used by MassHighway crews or consultants during the data capture, database population and map creation parts of the drainage inventories. This document will include protocol based on General Permit Addendum A for endangered species impacts.																						

TABLE 6-1: STORM WATER MANAGEMENT PLAN SUMMARY MATRIX

BMP ID #	BMP	MEASURABLE GOALS	RESPONSIBLE DEPARTMENT	Permit Year One				Permit Year Two				Permit Year Three				Permit Year Four				Permit Year Five				Next Permit
				Spring 03	Summer 03	Fall 03	Winter 03-04	Spring 04	Summer 04	Fall 04	Winter 04-05	Spring 05	Summer 05	Fall 05	Winter 05-06	Spring 06	Summer 06	Fall 06	Winter 06-07	Spring 07	Summer 07	Fall 07	Winter 07-08	
3D-2	Drainage Inventory	MassHighway will map drainage discharges within urbanized areas and review inventoried discharges for potential impacts to endangered species.	Environmental/ IT / Districts																					
3D-3		Include summary of discharges identified during the year and the review of these discharges for impact to endangered species in the annual report.	Construction/Planning/ Environmental/ IT													X				X				
National Historic Properties																								
7C	CE Checklist	MassHighway projects which include federal funds must complete this checklist at 25% Design stage. The checklist includes determining if the site could potentially affect historic properties.	Environmental/ Cultural Resources																					
8A	Cultural Resources Review	Reviews all projects for impacts to historic properties at the 25% Design stage.	Cultural Resources																					
7D	Environmental Site Data Form	MassHighway will develop this form to review potential impacts of a project to a variety of resource areas as part of compliance with the NPDES Construction and MS4 general permit. This form will include review of discharges for potential impact to historic properties and instructions to the contractor/designer if impacts are identified.	Environmental/ Construction																					
3B-2	Drainage Inventory	MassHighway will map drainage discharges within urbanized areas and review inventoried discharges for potential impacts to historic properties. The drainage inventory will include review of discharges based on General Permit Addendum B for historic properties impacts.	Construction/ Planning/ Environmental																					
3B-3		A summary of the discharges identified and the outcome of the historic properties review will be included in each annual report.	Construction/Planning/ Environmental/ IT													X				X				
Discharges to Water Quality Impaired Waterways																								
4B	MA DEP Stormwater Management Policy	MassHighway projects which are subject to the Wetlands Protection Act and/or the Clean Water Act Section 401 Water Quality Certification, will continue to meet Massachusetts DEP's Stormwater Management Policy and Performance Standards. The DEP Stormwater Management Policy meets the minimum requirements set forth by the EPA for post construction runoff control.	Environmental/ Construction/ Projects																					
4E	MassHighway Storm Water Handbook	MassHighway projects will continue to be designed and constructed in accordance with the requirements set forth in the MassHighway Storm Water Handbook. MassHighway has expanded the use of the Handbook to include all urbanized areas in addition to those subject to the Wetlands Protection Act.	Environmental/ Construction/ Projects																					
7D	Environmental Site Data Form	MassHighway will develop this form to review potential impacts of a project to a variety of resource areas as part of compliance with the NPDES Construction and MS4 general permit. This form includes review of discharges for potential impact to water quality impaired waterways. The form includes instructions to the contractor/designer if impacts are identified.	Environmental/ Construction																					
3B-2	Drainage Inventory	MassHighway will map drainage discharges within urbanized areas and review inventoried discharges for discharges which drain to impaired waterbodies.	Environmental/ IT / Districts																					
3B-3		A summary of the discharges which drain to impaired waterbodies will be included in each annual report.	Construction/Planning/ Environmental/ IT													X				X				

TABLE 6-1: STORM WATER MANAGEMENT PLAN SUMMARY MATRIX

BMP ID #	BMP	MEASURABLE GOALS	RESPONSIBLE DEPARTMENT	Permit Year One				Permit Year Two				Permit Year Three				Permit Year Four				Permit Year Five				Next Permit
				Spring 03	Summer 03	Fall 03	Winter 03-04	Spring 04	Summer 04	Fall 04	Winter 04-05	Spring 05	Summer 05	Fall 05	Winter 05-06	Spring 06	Summer 06	Fall 06	Winter 06-07	Spring 07	Summer 07	Fall 07	Winter 07-08	
Discharges to Established Total Maximum Daily Loads																								
4B	MA DEP Stormwater Management Policy	Continue to meet criteria in Policy for projects subject to Wetlands Protection Act.	Environmental/ Construction/ Projects																					
4E	MassHighway Storm Water Handbook	MassHighway projects will continue to be designed and constructed in accordance with the requirements set forth in the MassHighway Storm Water Handbook. MassHighway has expanded the use of the Handbook to include all urbanized areas in addition to those subject to the Wetlands Protection Act.	Environmental/ Construction/ Projects																					
7E	TMDL Recommendation Summary Table	Update TMDL Recommendation Summary Table to include TMDLs finalized within the last year and progress on implementation of any related measurable goals in each annual report.	Environmental																					
7D	Environmental Site Data Form	MassHighway will develop this form to review potential impacts of a project to a variety of resource areas as part of compliance with the NPDES Construction and MS4 general permit. This form includes review of discharges which drain to waterbodies with approved TMDLs. The form includes instructions to the contractor/designer if discharges to TMDL waterbodies are identified.	Environmental/ Construction																					
5E-1	Highway Runoff Contaminant Model	Develop and calibrate contaminant loading model.	Env. Div. Consultant																					
5E-2	Highway Runoff Contaminant Model	Determine a waterbody that is part of the TMDL schedule to perform a detailed study of MassHighway pollutant loading using the newly developed model. Complete analysis.	Env. Div. Consultant																					
3B-2	Drainage Inventory	MassHighway will map drainage discharges within urbanized areas and review inventoried discharges for discharges which drain to waterbody with an approved TMDL.	Environmental/ IT / Districts																					
3B-3	Drainage Inventory	A summary of the discharges which drain to a waterbody with an approved TMDL will be included in each annual report.	Construction/Planning/ Environmental/ IT													X				X				
Part V - Additional Resources (public swimming beaches, groundwater recharge areas, stressed basins, and public drinking water supplies)																								
4B	MA DEP Stormwater Management Policy	MassHighway projects which are subject to the Wetlands Protection Act and/or the Clean Water Act Section 401 Water Quality Certification, will continue to meet Massachusetts DEP's Stormwater Management Policy and Performance Standards. The DEP Stormwater Management Policy includes public swimming beaches and surface drinking water supplies as critical areas subject to more stringent water quality criteria. The policy also sets guidelines for minimizing loss of recharge to groundwater from a site.	Environmental/ Construction/ Projects																					
4E	MassHighway Storm Water Handbook	MassHighway projects will continue to be designed and constructed in accordance with the requirements set forth in the MassHighway Storm Water Handbook. MassHighway has expanded the use of the Handbook to include all urbanized areas in addition to those subject to the Wetlands Protection Act.	Environmental/ Construction/ Projects																					
7D	Environmental Site Data Form	MassHighway will prepare this form to review potential impacts of a project to a variety of resource areas as part of compliance with the NPDES Construction and MS4 general permit. This form includes review of discharges which drain to public swimming beaches, within stressed basins and public drinking water resources. The form includes instructions to the contractor/designer if such discharges are identified.	Environmental/ Construction																					

TABLE 6-1: STORM WATER MANAGEMENT PLAN SUMMARY MATRIX

BMP ID #	BMP	MEASURABLE GOALS	RESPONSIBLE DEPARTMENT	Permit Year One				Permit Year Two				Permit Year Three				Permit Year Four				Permit Year Five				Next Permit
				Spring 03	Summer 03	Fall 03	Winter 03-04	Spring 04	Summer 04	Fall 04	Winter 04-05	Spring 05	Summer 05	Fall 05	Winter 05-06	Spring 06	Summer 06	Fall 06	Winter 06-07	Spring 07	Summer 07	Fall 07	Winter 07-08	
3B-2	Drainage Inventory	MassHighway will map drainage discharges within urbanized areas and review inventoried discharges for discharges which drain to any of these additional resource areas.	Environmental/ IT / Districts																					
3B-3	Drainage Inventory	A summary of the discharges which drain to any of these additional resource areas. will be included in each annual report.	Construction/Planning/ Environmental/ IT													X				X				
Part IX - Resource Areas Required for Priority Consideration (public drinking water supplies, public swimming beaches, ORWs, shell fishing areas, 303d listed waterbodies and cold water fisheries)																								
4B	MA DEP Stormwater Management Policy	MassHighway projects which are subject to the Wetlands Protection Act and/or the Clean Water Act Section 401 Water Quality Certification, will continue to meet Massachusetts DEP's Stormwater Management Policy and Performance Standards. The DEP Stormwater Management Policy includes public swimming beaches, ORWs (including surface drinking water supplies), shell fish growing areas and cold water fisheries as critical areas subject to more stringent water quality criteria.	Environmental/ Construction/ Projects																					
4E	MassHighway Storm Water Handbook	MassHighway projects will continue to be designed and constructed in accordance with the requirements set forth in the MassHighway Storm Water Handbook. MassHighway has expanded the use of the Handbook to include all urbanized areas in addition to those subject to the Wetlands Protection Act.	Environmental/ Construction/ Projects																					
7D	Environmental Site Data Form	MassHighway will develop this form to review potential impacts of a project to a variety of resource areas as part of compliance with the NPDES Construction and MS4 general permit. This form includes review of discharges which drain to public swimming beaches, within stressed basins and public drinking water resources. The form includes instructions to the contractor/designer if such discharges are identified.	Environmental/ Construction																					
3B-2	Drainage Inventory	MassHighway will map drainage discharges within urbanized areas and review inventoried discharges for discharges which drain to any of these additional resource areas.	Environmental/ IT / Districts																					
3B-3		A summary of the discharges which drain to any of these additional resource areas. will be included in each annual report.	Construction/Planning/ Environmental/ IT													X				X				
Reporting																								
	Storm Water Management Plan/ NOI	Prepare Storm Water Management Plan (SWMP) and Notice of Intent (NOI) Application (BRP WM 08A)	SWPPP Team																					
		Submit SWMP and NOI to EPA and DEP	SWPPP Team	X (7/25/03)																				
	Annual Report	Prepare annual report summarizing the status of meeting each of the measurable goals.	Environmental/ Construction/ IT/ SWPPP Team																					
		Submit annual report to EPA and DEP.	Environmental					X				X				X				X				
	Storm Water Management Plan Evaluation	MassHighway will evaluate the SWMP on an ongoing basis as part of the implementation and annual reporting process.	SWPPP Team																					
		If upon evaluation, improved, additional or different controls are deemed necessary to meet the required standards, MassHighway will update the SWMP and submit revisions to the EPA and DEP.	SWPPP Team																					
	Storm Water Management Plan Reapplication	MassHighway will reapply for coverage under the general permit.	SWPPP Team																					

7.0 REFERENCES

Athayde, D.N. et al. 1983. Results of the Nationwide Urban Runoff Program, Volume I - Final Report. NTIS PB84-18555552. U.S. Environmental Protection Agency, Water Planning Division, Washington, D.C.

DEP. 1997a. Stormwater Management Volume One: Stormwater Policy Handbook. (March 1997), MA Department of Environmental Protection and MA Office of Coastal Zone Management, Boston, MA.

DEP. 1997b. Stormwater Management Volume Two: Stormwater Technical Handbook. (March 1997), MA Department of Environmental Protection and MA Office of Coastal Zone Management, Boston, MA.

Federal Register, December 8, 1999. 40 CFR Parts 9, 122, 123, and 124 National Pollutant Discharge Elimination System--Regulations for Revision of the Water Pollution Control Program Addressing Storm Water Discharges; Final Rule. pg. 68721-68851.

FHWA. 1990. Pollutant Loadings and Impacts from Highway Stormwater Runoff Volume I: Design Procedure., U.S. Department of Transportation, Federal Highway Administration, McLean, VA.

FHWA. 1993. Stormwater Management for Transportation Facilities. National Cooperative Highway Research Program Synthesis of Highway Practice 174, Transportation Research Board, Washington, DC.

Hoffman, E., A. Falke, and J. Quinn. 1980. Waste Lubricating Oil Disposal Practices in Providence, Rhode Island: Potential Significance to Coastal Water Quality. Coastal Zone Management Journal, Volume 8.

MassHighway. January 2002. The MassHighway Storm Water Handbook. MassHighway Department, Boston, MA.

Massachusetts DEP. 1997. Massachusetts Erosion and Sediment Control Guidelines for Urban and Suburban Areas. Prepared by Franklin, Hampden, Hampshire Conservation Districts. Northampton, MA.

MassHighway. 1997. MassHighway Highway Design Manual, Chapter 10 (Metric Edition): Drainage and Erosion Control. Massachusetts Highway Department, Boston, MA.

USEPA. 1993. Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters. 840-B-92-002. U.S. Environmental Protection Agency, Office of Water, Washington, D.C.

USEPA. December 1999. Storm Water Phase II Final Rule - Urbanized Areas: Definition and Descriptions. Fact Sheet 2.2. U.S. Environmental Protection Agency, Office of Water, Washington, D.C.

USEPA. January 2000. Storm Water Phase II Final Rule - Small MS4s Storm Water Program Overview. Fact Sheet 2.0. U.S. Environmental Protection Agency, Office of Water, Washington, D.C.

USEPA. January 2000. Storm Water Phase II Final Rule - Who's Covered? Designation and Waivers of Regulated Small MS4s. Fact Sheet 2.1. U.S. Environmental Protection Agency, Office of Water, Washington, D.C.

USEPA. January 2000. Storm Water Phase II Final Rule - Public Education and Outreach Minimum Control Measure. Fact Sheet 2.3. U.S. Environmental Protection Agency, Office of Water, Washington, D.C.

USEPA. January 2000. Storm Water Phase II Final Rule - Public Participation/ Involvement Minimum Control Measure. Fact Sheet 2.4. U.S. Environmental Protection Agency, Office of Water, Washington, D.C.

USEPA. January 2000. Storm Water Phase II Final Rule - Illicit Discharge Detection and Elimination Minimum Control Measure. Fact Sheet 2.5. U.S. Environmental Protection Agency, Office of Water, Washington, D.C.

USEPA. January 2000. Storm Water Phase II Final Rule - Construction Site Runoff Control Minimum Control Measure. Fact Sheet 2.6. U.S. Environmental Protection Agency, Office of Water, Washington, D.C.

USEPA. January 2000. Storm Water Phase II Final Rule - Post Construction Runoff Control Minimum Control Measure. Fact Sheet 2.7. U.S. Environmental Protection Agency, Office of Water, Washington, D.C.

USEPA. January 2000. Storm Water Phase II Final Rule - Pollution Prevention/ Good Housekeeping Minimum Control Measure. Fact Sheet 2.8. U.S. Environmental Protection Agency, Office of Water, Washington, D.C.

USEPA. January 2000. Storm Water Phase II Final Rule - Permitting and Reporting: The Process and Requirements. Fact Sheet 2.9. U.S. Environmental Protection Agency, Office of Water, Washington, D.C.

USEPA. January 2000. Storm Water Phase II Final Rule - Federal and State-Operated MS4s: Program Implementation. Fact Sheet 2.10. U.S. Environmental Protection Agency, Office of Water, Washington, D.C.

USEPA. January 2000. Storm Water Phase II Final Rule - Small Construction Program Overview. Fact Sheet 3.0. U.S. Environmental Protection Agency, Office of Water, Washington, D.C.

USEPA. April 18, 2003. National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges from Small Municipal Separate Storm Sewer Systems. U.S. Environmental Protection Agency, Office of Water, Washington, D.C.

USEPA. April 18, 2003. Response to Comments. U.S. Environmental Agency, Office of Water, Washington, D.C.

USEPA. National Menu of Best Management Practices for NPDES Storm Water Phase II. U.S. Environmental Protection Agency, Office of Water, Washington, D.C.

USEPA. Measurable Goals Guidance for Phase II Small MS4s. U.S. Environmental Protection Agency, Office of Water, Washington, D.C.